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Taxonomic revision of the African and Southwest Asian species of *Platyderus* Stephens, subg. *Eremoderus* Jeanne (Coleoptera, Carabidae, Sphodrini)

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Abstract

Species of the subgenus *Eremoderus* Jeanne, 1996, genus *Platyderus* Stephens, 1827, occurring in continental Africa (excluding Macaronesia) and southwest Asia, are taxonomically revised. The following new species groups and species are defined and described, "*weiratheri*" group: *Platyderus* (*Eremoderus*) *chatzakiae*, **sp. nov.** (type locality: Greece, Kalymnos Island, near Stimenia Village); "*iranicus-vanensis*" group: *Platyderus* (*Eremoderus*) *felixi*, **sp. nov.** (type locality: Iran, Chahar Mahal va Bakhtiari Province, 10 km west of Naghan Town); *Platyderus* (*Eremoderus*) *iranicus*, **sp. nov.** (type locality: Iran, Chahar Mahal va Bakhtiari Province, 7 km NE Naghan Town); *Platyderus* (*Eremoderus*) *vanensis*, **sp. nov.** (type locality: Turkey, Van Province, Gevaş Town); *Platyderus* (*Eremoderus*) *vrabeci*, **sp. nov.** (type locality: Turkey, Nemrut Dağı); "*lassallei*" group: *Platyderus* (*Eremoderus*) *lassallei*, **sp. nov.** (type locality: Iran, Mazandaran Province, between Nur City and Lavij Village); "*davatchii*" group: *Platyderus* (*Eremoderus*) *klapperichi*, **sp. nov.** (type locality: Iran, Mazandaran Province, Damavand, 2000 m); "*afghanistanicus*" group: *Platyderus* (*Eremoderus*) *afghanistanicus*, **sp. nov.** (type locality: Afghanistan, "Habatah"); "*languidus*" group: *Platyderus* (*Eremoderus*) *arabicus*, **sp. nov.** (type locality: Saudi Arabia, "Hedjaz"); *Platyderus* (*Eremoderus*) *brunki*, **sp. nov.** (type locality: Republic of Yemen, Thula District, between Kaukaban and Shibam); *Platyderus* (*Eremoderus*) *irakensis*, **sp. nov.** (type locality: Iraq, Ar Rutba District, 115 km E Ar-Rutbah Town); *Platyderus* (*Eremoderus*) *jordanensis*, **sp. nov.** (type locality: Jordan, Al-Betrā' District, Little Petra). Six previously described species — *P. brunneus* Karsch, *P. insignitus* Bedel, *P. languidus* Reiche & Saulcy, *P. ledouxi* Morvan, *P. taghizadehi* Morvan, and *P. weiratheri* Mařan — are redescribed based on type and/or non-type material. *P. davatchii* Morvan placed as a member of the subgenus was not treated due to the lack of material available for study. The following new nomenclature acts are proposed: *Platyderus brunneus* Karsch, 1881, **stat. rev.**, is removed from synonymy with *Feronia languida* Reiche & Saulcy, 1855; *Platyderus elegans* Bedel, 1900, **syn. nov.**, is proposed as junior synonym of *Platyderus brunneus* Karsch, 1881; *Platyderus ferrantei* Reitter, 1909 is proposed as subspecies *Platyderus brunneus ferrantei* Reitter, 1909, **stat. nov.** In order to preserve the stability of nomenclature, lectotypes are designated for: *Feronia languida* Reiche & Saulcy, *Platyderus brunneus* Karsch, and *Platyderus weiratheri* Mařan. Keys to identification of the male and female specimens of the species from the regions studied are provided.

Key Words

Afghanistan, Egypt, Greece (Dodecanese), Iran, Iraq, Israel, Jordan, Libya, Morocco, *Platyderus*, Saudi Arabia, taxonomy, Tunisia, Turkey, Yemen

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Introduction

The Palaearctic genus *Platyderus* Stephens, 1827 belongs to the subtribe Atranopsina Baehr, 1982, of tribe Sphodrini Laporte, 1834, and includes 111 species that are arranged in two subgenera (Hovorka 2017; Machard 2017; Machard 2020). Most representatives of this genus, especially members of *Platyderus* (s. str.), prefer shaded and humid habitats. In Europe and Anatolian Peninsula, they are found usually in shaded habitats near brooks or rivers during the summer, or in subterranean environment. In the southern margins of the generic range many species live in humid ravines and are active in the winter and early spring seasons because of the humid microhabitat conditions (Anichtchenko 2005; Ruiz-Tapiador and Anichtchenko 2007). Some taxa are partly depigmented and exhibit a moderate morphological specialization to a semi-hypogean mode of life because of the xeric conditions in occupied habitats (Lagar Mascaró 1978; Anichtchenko 2005; Ortuño and Gilgado 2010; authors' observations). All *Platyderus* taxa hitherto examined possess reduced metathoracic wings. As a consequence of flight loss and habitat selection species of this genus exhibit a tendency toward geographic isolation and differentiation into various localized forms (Ruiz-Tapiador and Anichtchenko 2007), especially in the southern Palaearctic Region and at higher altitudes. Based on longstanding taxonomic studies in Spain, Anichtchenko (2011) proposed that the true generic diversity is likely to be twice higher than presently described, and that ignorance regarding diversity is due mostly to the rarity of material in collections, due to prior use of ineffective collecting methods.

Platyderus-species possess a median protrusion of the anterior margin of the pronotum provided with a vertex underneath covered with a microsculpture of transverse granulae. This peculiar, diagnostic structure representing a stridulatory organ was first described by Lindroth (1956). The structure in question is considered a synapomorphic feature in subtribe Atranopsina including *Platyderus* (Casale, 1988: 126) but excluding the Macaronesian genus *Amaroschema* Jeannel, 1943 (see Machado 1992).

Because external morphology of the closely related species is rather uniform (especially in *Platyderus* s. str.), and many species exhibit infraspecific variation, in many instances no stable characters exist to provide reliable identification. For example, the shape of the pronotum, extent of punctation (if present) on the pronotal base, and position and number of the elytral discal pores often vary among individuals of a given species (Guéorguiev 2009;Anichtchenko 2012).

The subgenus *Eremoderus* Jeanne, 1996 was proposed by Jeanne (1996: 398) for *Platyderus* species with four or more setiferous punctures on the anterior side of the ventral margin of the mesofemur (in original: "Mésofémurs avec quatre soies (parfois cinq ou six) prés du bord postérieur de leur face inférieure"). The type species of *Eremoderus* was designated as *Feronia languida* Reiche & Saulcy, 1855. In the same work (ibid.), Jeanne refers to the new subgenus two species groups, the group of *P. insignitus* and the group of *P. languidus*. Because this author has never discussed the species included in each of these groups, respectively the internal structure of the subgenus, one may conclude that only two species were then included in *Eremoderus*. Some authors like Serrano (2003, 2013) and Azadbakhsh and Nozari (2015) who respectively treated the Iberian and Iranian representatives of *Platyderus* as belonging to the nominotypical subgenus, accepted Jeanne's division of the genus into two subgenera (see also Hovorka and Sciaky 2003; Hovorka 2017; Machard 2017; 2019). Other authors, however, treated *Platyderus* s. str. and *Eremoderus* as subjective synonyms (Lorenz 1998, 2005) or expressed support for such a view (Guéorguiev 2009; Schmidt 2009). According to the most recent view (Hovorka 2017), the subgenus in question includes five species, *P. alticola* Wollaston, 1864 and *P. lancerottensis* Israelson, 1990 from Canary Islands, *P. insignitus* Bedel, 1902 from Morocco, the supposedly widespread *P. languidus* (Reiche & Saulcy, 1855), and *P. haberhaueri* Heyden, 1889 from Uzbekistan and Tajikistan.

The aim of the present study is to revise the known taxa of *Eremoderus* from Africa (excluding Macaronesia) and Southwestern Asia, to classify a set of recently collected specimens morphologically close to *P. insignitus* and *P. languidus*, and, as a consequence of these tasks to estimate if the rank of the subgenus given by Jeanne (1996) is justified.

Materials and methods

We have examined 195 individuals representing 18 species and one undefined form, with 141 of them measured to obtain data for sizes and ratios. Even though no specimens of *P. davatchii* were available to us this taxon is referred to *Eremoderus* on account of its habitus and general morphology (see Morvan 1970: 194–195 and fig. 6) with both *P. taghizadehi* and *P. ledouxi*.

Examination methods

Dissections and preparations of male genitalia were performed following Hanley and Ashe (2003). After processing, genitalia were preserved by embedding in Euparal Medium or a mixture of polyvinylpyrrolidone, glycerol and sorbitol on a microplastic card for future studies. The microplastic card has been added on the pin under the dissected specimen. Examinations and measurements of morphological details as well as color images were taken with an Olympus SZX 10 stereo microscope. Line drawings were performed using a drawing tube on Carl Zeiss Jena Amplival microscope.

We recorded data for variation in two measurements and eight ratios to obtain body proportions on the dorsal

surface of specimens (Tables 1–3); for this purpose we measured ten male and ten female specimens, if available. A ninth ratio, MA/MI was taken after gauging the left metepisternum of five specimens, if available.

The maps were generated through the online tool SimpleMappr (Shorthouse 2010).

Abbreviations to measurements and ratios

BL	body length from the apex of the longer mandible to the apex of the longer elytron;
EL	length of elytra (measured along the length of stria 1 from the basal margin to the apex of the left elytron);
EW	maximum width of elytra (= BW: body width) measured as maximum distance across elytra;
HW	maximum linear distance across the head including eyes;
MA	length of anterior margin of metepisternum.
MI	length of interior margin of metepisternum (excl. metepimeron);
PA	width of pronotal apex between the tips of the anterior angles;
PB	width of pronotal base between the tips of the posterior angles;
PL	length of pronotum along median line.
PW	maximum width of pronotum.

The length of the median lobe of aedeagus was measured between base and apex when the lobe is in ventral position.

Abbreviations used for the depositories of the examined material

HNHM	Hungarian Natural History Museum, Budapest, Hungary (Otto Merkl, Győző Szél);
HMIM	Hayk Mirzayans Insect Museum, Tehran, Iran (Sayeh Serri);
MFNB	Museum für Naturkunde Berlin, Germany (Johannes Frisch, Bernd Jaeger);
MHNG	Muséum d'Histoire Naturelle, Geneva, Switzerland (Julio Cuccodoro);
MIZ	Museum and Institute of Zoology, Warszawa, Poland (Tomas Huflejt);
MMBC	Moravske Museum, Brno, Czech Republic (Petr Baňař);
MNHN	Muséum National d'Histoire Naturelle, Paris, France (Thierry Deuve, Azadeh Taghavian);
NHMC	Natural History Museum of Crete, Greece (Apostolos Trichas);
NHMUK	Natural History Museum, London, United Kingdom (Maxwell Barclay, Beulah Garner);
NME	Naturkundmuseum Erfurt, Germany (Matthias Hartmann);
NMNHS	National Museum of Natural History, Sofia, Bulgaria (Borislav Guéorguiev);
NMPC	National Museum (Natural History), Prague, Czech Republic (Jiří Hájek);
NMW	Naturhistorisches Museum Wien, Vienna, Austria (Harald Schillhammer);
SMNH-TAU	Steinhardt Museum of Natural History, Tel Aviv University, Tel Aviv, Israel (Laibale Friedman);
cASL	working collection of Thorsten Assmann, Lüneburg, Germany (part of Zoologische Staatssammlung, München);
cBRU	collection of Ingo Brunk, Dresden, Germany;
cDOS	collection of Alexander Dostal, Vienna, Austria;
cFEL	collection of Ron Felix, Berkel Enschot, The Netherlands;
cHAJ	collection of Evžen and Patrik Hajdaj, Ježov, Czech Republic;
cKME	collection of Rudolf Kmeco, Litovel, Czech Republic;
cLAS	collection of Bernard Lassalle, Boissy-les-Perche, France;
cMAC	collection of Patrice Machard, Molineuf, France;
cMUI	collection of Jan Muilwijk, Bilthoven, The Netherlands;
cPTZ	collection of Andreas Pütz, Eisenhüttenstadt, Germany;
cREU	collection of Christoph Reuter, Hamburg, Germany;
cWEI	collection of Patrick Weill, Pau, France;
cWR	working collection David W. Wrase, Gusow-Platkow, Germany (part of Zoologische Staatssammlung, München);
cZIEG	collection of Wolfgang Ziegler, Rondeshagen, Germany.

The total number of specimens examined, counted for each species, is represented by the abbreviation TME. The total number of specimens with genitalia examined, counted for each species, is indicated by the abridgment TGE.

Labelling

Exact label data are cited for all material. Labels of type specimens were cited as originally given, with the author's remarks and comments enclosed in square brackets. Specimens of the newly described species are provided with one red printed label "HOLOTYPE, or PARATYPE / name of taxon sp. nov. / Guéorguiev, Wrase, Assmann, Muilwijk, Machard year". Specimens for lectotype designation are provided with one red printed label "LECTOTYPE or PARALECTOTYPE / name of taxon, author(s) name(s) year / des. Guéorguiev, Wrase, Assmann, Muilwijk, Machard year".

Separate label lines are indicated by a slash (/), and separate labels are noted by a double slash (//). Abbreviation 'h' stands for handwritten, 'h&p' for mixed handwritten and printed, 'o' for orange, 'p' for printed, 'pn' for pink, 'r' for red, 'tl' for teal (medium blue-green), 'tq' for turquoise (light blue-green), 'w' for white, and 'y' for yellow.

Taxonomic treatment

Genus *Platyderus* Stephens, 1827

Type species. *Harpalus depressus* Audinet-Serville, 1821

Subgenus *Eremoderus* Jeanne, 1996

Type species. *Feronia languida* Reiche & Saulcy, 1855

Diagnosis. Within *Platyderus*, the members of *Eremoderus* are separated by the following set of distinctive characters: ventral sclerite of median lobe of aedeagus narrow and long (best seen at ventral view, Figs 10A–I, 11A–G); seminal canal and receptaculum of comparable lengths (Figs 13A–F, 14A–C, E, F, 15A–F); ventral margin of anterior side of mesofemur with four or more, rarely three (specimens of *P. taghizadehi* and *P. weiratheri*) setiferous punctures ventrally (Fig. 5A–I); proximal margin, i.e. the "apex" of urite IX symmetrical or nearly symmetrical (Fig. 7A–M).

Description. ***Microsculpture and micropunctation.*** Dorsal surface of head with regular isodiametric to slightly transverse sculpticells that are more or less reduced on posterior half of clypeus and disc (most species) or with complete microreticulation of isodiametric sculpticells (taxa of "*languidus*" group), labrum with coarser such sculpticells than remainder of head. Elytral microreticulation distinct, usually more engraved and larger than on head and pronotum, represented by regular isodiametric sculpticells (some specimens of *P. vanensis* sp. nov. without micropunctation on elytral intervals 1–5). Dorsal surface of head and pronotum with scattered micropunctation hardly visible below magnification 90×, elytra with coarser, more distinct micropunctation, visible at magnification below 90× (micropunctation absent on dorsal surface of head and elytra in most taxa of "*languidus*" group, except for head of *P. languidus*). ***Punctation.*** Basal foveae of pronotum and adjacent lateral areas moderately punctate, punctures at sides usually not reaching anterior half (*P. weiratheri*, taxa of "*lassallei*" and "*davatchii*" groups), coarsely and densely punctate as punctures at sides usually reaching anterior half (*P. chatzakiae* n.sp., taxa of "*iranicus-vanensis*" group), or scarcely punctate to impunctate (*P. afghanistanicus* sp. nov., taxa of "*languidus*" group). Prosternum laterally and proepisternum moderately (most species) to coarsely, densely and deeply punctate (taxa of "*iranicus-vanensis*" group) or finely, sparsely and shallowly punctate to impunctate (taxa of "*languidus*" group). Prosternum medially and metasternum medially smooth. Mesepisternum, metasternum laterally and metepisternum indistinctly (*P. afghanistanicus*, taxa of "*languidus*" groups) or clearly punctate (taxa of resting species groups, as in *P. vanensis* sp. nov. more coarsely than in other species). Abdominal ventrite 1 punctate and/or wrinkled, sometimes impunctate, ventrites 2–3 wrinkled, punctate or impunctate at sides, smooth medially, ventrites 4–5 mostly impunctate and smooth, but sometimes finely wrinkled at sides, 6 usually impunctate and smooth in whole (ventrites 1–4 coarsely punctate at sides in eastern populations of *P. vanensis* sp. nov.). ***Chaetotaxy.*** Labrum with six equidistant setae, lateral two longer than medial four. Clypeus with two long anterolateral setae. Two supraorbital setae each side. Stipes with anterior and posterior setae, former about half the length of latter. Pair of long setae on apical margin of ligula. Penultimate labial palpomere with two long setae on internal margin and 2–4 rather short apical setae; terminal labial palpomere with some scattered, very short and fine hairs. Mentum with two short and fine paramedial setae (sometimes broken off). Submentum with two long medial setae and two very short and fine lateral setae (occurring in most species but often broken off) or without lateral setae (*P. klapperichi* sp. nov.). Pronotum with one lateral seta at second quarter and one basal seta near posterior angles. Elytron with parascutellar seta at junction of angular base of stria 1, puncture small; interval 3 with three (rarely two) discal setiferous punctures (in *P. vanensis* sp. nov., punctures hardly discernible because of coarse and deep macropunctation of interval), first one adjoining stria 3 (rarely in midst of interval 3 – *P. chatzakiae* sp. nov., adjoining stria 2 – *P. irakensis* sp. nov. or absent – in most specimens of "*iranicus-vanensis*" group), second and third punctures adjoining stria 2, first puncture situated in anterior third, second puncture in medial third or third quarter, and third puncture (lacking in *P. chatzakiae* sp. nov.) in posterior third to fifth; apical portion of stria 7 with two setiferous punctures, as posterior one situated closer to lateral gutter than to suture; umbilicate series consists of 16–17 (rarely 15 or 18 on one elytron) uniform punctures, not forming compact groups, anterior three punctures on lateral gutter, remaining ones on stria 8. Posterior side of profemur with three (most species) or more (*P. brunneus*, *P. irakensis*, *P. jordanensis*, *P. languidus*) long setae, one to two in basal third, one to two in medial third (near ventral edge), and one in proximal fifth (near knee). Anterior side of mesofemur ventrally usually with four or more setae, rarely with three setae; mesocoxa surface vaguely (most species) or densely pubescent (taxa of "*languidus*" group), with one posteromedial seta and one (most species) or one to four lateral setae (taxa of "*weiratheri*" and "*languidus*" groups); mesotrochanter with seta. Anterior side of metafemur ventrally mostly with one seta in basal third and one in medial third (additional setae existing in specimens of taxa from "*languidus*" group). Abdominal

ventrites 3–5 with ambulatory setae; last ventrite with two setae in male and female. ***Head.*** Eyes subconvex, long, each with length little exceeding length of scapus; tempora oblique, straight or convexly converging to neck. Labrum as long as or slightly shorter than clypeus. Clypeus slightly concave in front, rarely straight (*P. afghanistanicus* sp. nov.). Mentum and submentum separate by distinct labial suture; mentum wide, short, deeply emarginate, without paramedial pits, median tooth, prominent, rounded anteriorly and bordered at base, epilobes well-exceeding median tooth in front, with posterior border medially concave. ***Thorax.*** Disc of pronotum barely to moderately convex; median line well-impressed, long but not reaching anterior and posterior margin; base with one sublinear fovea each side, impressed on basal third, foveae well-impressed (most species) or shallowly impressed (taxa of "*languidus*" group); anterior margin narrower than posterior margin, slightly concave each side, median projection covering *pars stridens* (stridulatory organs); anterior bead narrow, present laterally, impressed, present, lacking or indistinctly impressed in medial eighth to tenth; anterior angles well-projecting, rounded at tip; sides convex, straight or concave to base, lateral beads fine, complete to posterior angles; posterior margin concave in middle, slightly convex near angles; basal bead present laterally, present or reduced medially; posterior angles obtuse, projecting or not projecting laterally, rounded at tip. Prosternal process bordered, subovate, rounded at apex. Metepisternum narrowed behind, its internal margin as long as, or longer than, anterior margin. ***Elytra.*** Elytra coalesced along suture, widest at middle third or third quarter. Disc convex; humeri widely rounded. Basal bead arcuate medially, reaching or almost reaching scutellum, laterally forming obtuse angle with lateral margin and no denticle at humerus. Sides from basal margin towards middle third smoothly widened, from there to apex roundly narrowed. Parascutellar striole, if present, short, joining (rarely) or not joining (mostly) with stria 1; striae 1–6 usually reaching or almost reaching basal bead, 7 reaching or not reaching to it; base of stria 8 ending at third umbilicate puncture; striae 1, 7 and 8 apically separately joining lateral gutter; striae 1 and 2 mostly fused shortly before apex and reaching lateral gutter (if stria 2 not joining stria 1, it ends before lateral gutter); pairs of striae 3–4 and 5–6 fused before apex but neither joined stria reach lateral gutter (joined stria of pair 3–4 ending more apically than that of pair 5–6; in two specimens of *P. felixi* sp. nov., following aberration exists: striae 3 and 4 posteriorly, each of them fusing separately with stria 2 and joined stria reaching lateral gutter); parascutellar striola and striae 1–8 impunctate or finely punctate, shallow (taxa of "*languidus*" group), finely to moderately punctate and impressed (most species), or coarsely punctate and impressed (*P. vanesis* sp. nov.). Intervals subconvex (most species) to nearly flat (taxa of "*languidus*" group). Metathoracic wings reduced, scales-like, or absent. ***Abdomen.*** Ventrites 2 and 3 coalesced, suture between them mostly present, rarely lacking. ***Legs.*** Moderately to considerably long and slender. Tarsomeres 1–5 convex and smooth (most species; Fig. 6D, E) or partly flattened and slightly longitudinally grooved (*P. brunneus*, *P. irakensis*; Fig. 6A–C) on dorsal side, with two rows of setae on ventral side; male protarsomeres 1–3 distinctly dilated, with biseriate adhesive vestiture ventrally; mesotarsomeres 1–3 and metatarsomeres 1–3 laterally grooved or ungrooved. ***Male genitalia.*** Urite IX suboval, with proximal margin not or slightly asymmetrical (Fig. 7A–M). Median lobe of aedeagus in lateral view curved ventrally, with basal bulb protruding dorsally and having a well-developed, thick aileron and apex straight or turned up (Figs 8A–I, 9B–H); same in ventral view straight, subcylindrical, with long shaft (part restricted between basal bulb and apical lamella) and apical lamella more or less symmetrical (Figs 10A–I, 11A–G). Internal sac well-differentiated, containing two sclerites, a less sclerotized (reticulate), globular dorsal sclerite and a more sclerotized, elongate ventral sclerite (respectively, light grey colored and dark grey colored on Figs 8–11); in lateral view dorsal sclerite rounded (often a denser, saddle-shaped structure at proximal position is distinguished), and ventral sclerite is drop-shaped, both sclerites hardly distinctive to each other in lateral position than in ventral position; in ventral view dorsal sclerite is laterally rounded (forming one or two short curves from left side and one long curve from right side), and ventral sclerite is long and more or less narrow, with distal end straight or nearly straight (taxa of most species groups) or curved to left ("*lassallei*" and "*davatchii*" groups) and a position within internal sac parallel to longitudinal axis of median lobe (most species) or oblique to it ("*weiratheri*" group). Right paramere short, thin, more or less concave ventrally (Fig. 12A–N). ***Female genitalia*** (Figs 13A–F, 14A–C, E, F, 15A–F). Basal gonocoxite large to very large (five to ten times larger than apical gonocoxite), unsetose. Apical gonocoxite small, short, with narrow, falcate apex (mostly pointed, rarely blunt or rounded), one (taxa of "*languidus*" group, except for *P. brunki* sp. nov.) or two large dorsolateral ensiform setae (taxa of "*weiratheri*","*iranicus-vanensis*","*lassallei*","*davatchii*" group plus *P. brunki* sp. nov.), one large dorsomedial ensiform seta, and two long and fine apical nematiform setae in sensory pit (nematiform setae not found only in *P. jordanensis* sp. nov. and *P. languidus*). Bursa copulatrix small to moderately large, subconical or subquadrate, one-chambered in most species, two-chambered in *P. irakensis* sp. nov. Spermatheca relatively long, moderately differentiated, formed by seminal canal and receptaculum of similar length, seminal canal narrower, somewhat curved, receptaculum wide and straight; spermathecal gland very large, subelongate to round, with well-differentiated atrium; spermathecal canal short, connected in apical second fourth of spermatheca, either in basal third (taxa of "*languidus*" group, except *P. brunki* sp. nov. and *P. insignitus*) or medial third of receptaculum (two foregoing species plus taxa of remaining species groups).

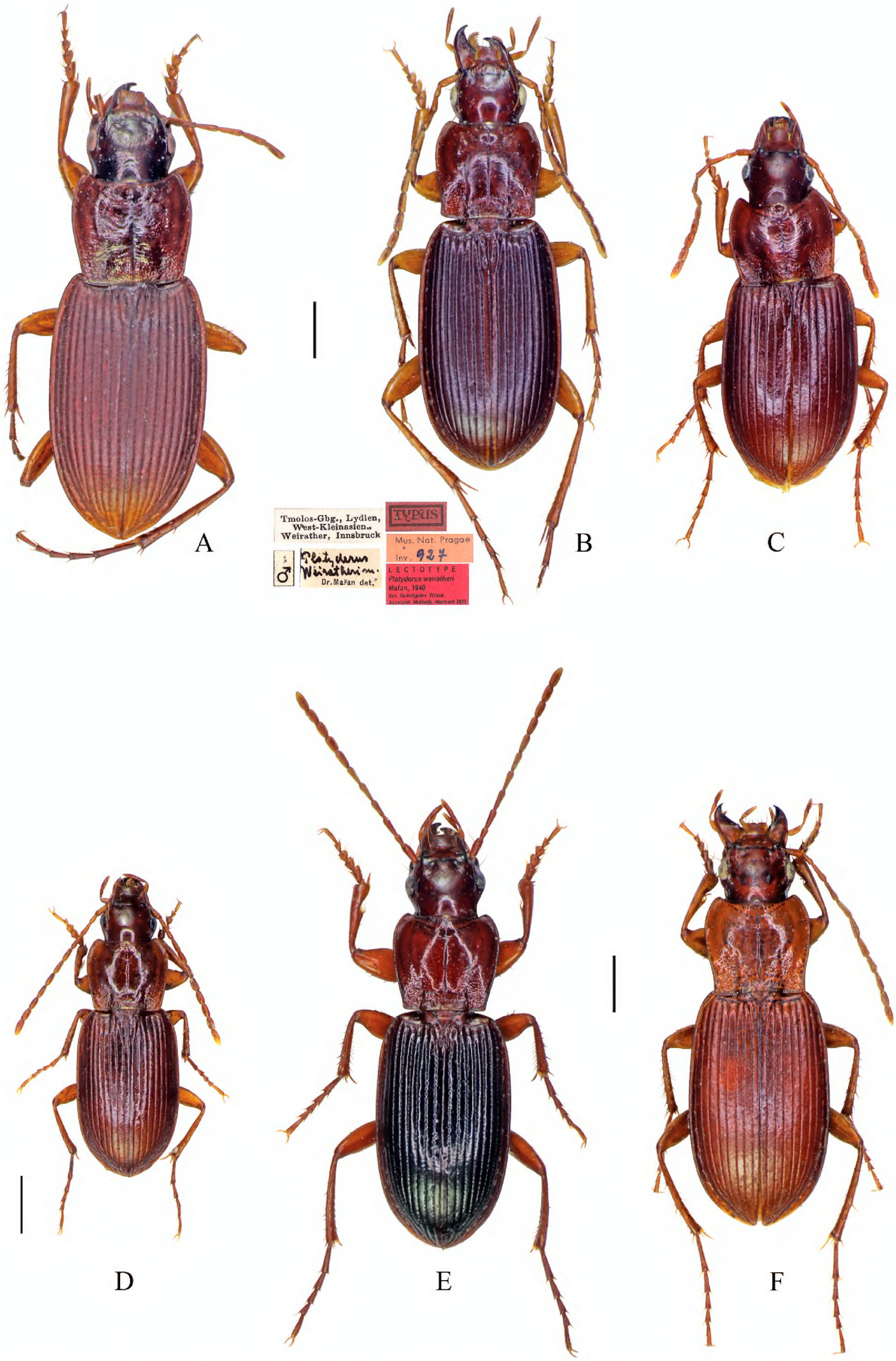

Figure 1. Dorsal habitus. **A.** *Platyderus* (*Eremoderus*) *chatzakiae*, sp. nov., holotype; **B.** *P.* (*E.*) *weiratheri* Mařan, 1940, lectotype and its labels; **C.** *P.* (*E.*) *felixi*, sp. nov., holotype; **D.** *P.* (*E.*) *iranicus*, sp. nov., male paratype, Cheri pass 20 km W Samsami, Chahar Mahal va Bakhtiari Province, Iran; **E.** *P.* (*E.*) *vanensis*, sp. nov., holotype; **F.** *P.* (*E.*) *vrabeci*, sp. nov., holotype. Scale bars: 1 mm.

"*weiratheri*" species group

Diagnosis. Representatives of this group share one trait, the ventral sclerite of internal sac obliquely situated with respect to the main axis of the median lobe in the ventral view and distinctly bent in middle in lateral view (Fig. 10A, B). Species from the other groups of *Eremoderus* have a ventral sclerite parallel to the main axis of the median lobe in ventral view and straight in the lateral view (Fig. 10C–I). This trait divides the subgenus into two groups that may separate, one including the taxa of the "*weiratheri*" group, and another – taxa of the remaining species groups.

Notes. The group includes *P. weiratheri* from Southwest Turkey and *P. chatzakiae* sp. nov. from Kalymnos Island (Greece, Dodecanese; see Fig. 16). The first species inhabits high altitudes in the western Toros Range, whereas the second one is a dweller of Mediterranean scrub habitat at lower altitudes.

1. *Platyderus* (*Eremoderus*) *chatzakiae*, sp. nov.

http://zoobank.org/65B653A0-F02D-4F08-B697-41D5DE8E7B79

Figs 1A, 7A, 8A, 10A, 12A, 16, Table 1

Type locality. Greece, Kalymnos Island, Stimenia Cave.

Note on type locality. The Stimenia Cave is situated in the northeastern part of the Vathi Valley, in an area called St. Nikolas, on the Kalymnos Island, belonging to the Dodecanese.

Type material. ***Holotype*** ♂, '8422, KALYMNOS Stimenia, end / road st18 9/6/2005, Lg Chatzaki' (NHMC).

TME: 1 specimen. TGE: 1♂.

Etymology. Latinized eponym based on the surname of Maria Chatzaki (Democritus University of Thrace, Komotini, Greece), a Greek arachnologist, who collected the holotype.

Diagnosis. *P. chatzakiae* sp. nov. differs from *P. weiratheri* in wider body (BW: 2.85 mm, vs. 2.35–2.60 mm), more coarsely punctate disc of head (vs. finely punctate or nearly smooth disc of head), anterior elytral discal puncture situated in midst of interval 3 (vs. anterior discal puncture adjoining stria 3), and elytra both in relation to elytra width narrower (EL/EW= 1.60, vs. 1.63–1.71) and in relation to pronotum length shorter (EL/PL= 2.49, vs. 2.55–2.83).

Description. ***Habitus.*** Large size for *Platyderus* species (BL: 8.05 mm; BW: 2.85 mm), with elongate, moderately convex body (Fig. 1A). ***Measurements and ratios.*** See Table 1. ***Color and lustre.*** Body dorsally and ventrally red-brown, head, pronotum and ventral surface slightly darker than elytra, appendages (antennae, palpi and legs) and elytral epipleura slightly lighter than elytra. Head, pronotum, and ventral surface rather shiny, elytra much less shiny. ***Microsculpture and punctation.*** Pronotum without regular microreticulation even on anterolateral and posterolateral parts. Elytral intervals, scutellum and basal margin with distinct isodiametric sculpticells; lateral gutter without microsculpture. Ventral surface with scarcely-visible isodiametric sculpticells (proepisternum) or with sculpticells slightly transverse (abdominal ventrites at sides) to not apparent. Head punctate and wrinkled on disc and posterior part of clypeus, labrum impunctate, without wrinkles, anterior part of clypeus and vertex sparsely punctate, without wrinkles. Pronotum coarsely and densely punctate in basal part and laterally, finely and sparsely punctate on disc and anterior part medially. Elytra with scanty micropunctation. Abdominal ventrite 1 moderately wrinkled, ventrites 2–6 smooth. ***Head.*** One-third narrower than pronotum wide (PW/HW= 1.34). Eyes almost flat. Labrum subrectangular, as long as clypeus, with anterior margin rather concave. Frontoclypeal suture distinct in middle, indistinct at sides. Frontal furrows subfoveolate, shallow. Paraorbital sulci straight, moderately deep, ended posteriorly after level of posterior margin of eye and slightly before level of posterior supraorbital pore. ***Thorax.*** Pronotum slightly wider than long (PW/PL= 1.19), with widest point at second quarter. Anterior and posterior transverse impressions slightly distinct medially, lacking laterally. Sides sinuate, convex medially and anteriorly, slightly concave posteriorly; anterior border distinctly beaded laterally, indistinctly in medial 1/15; posterior margin finely beaded. Metepisternum as long as wide, MA/MI= 0.97–1.03. ***Elytra.*** Elongate, less than one and two thirds as long as wide (EL/EW= 1.60), two and a half times as long as pronotum (EL/PL= 2.49), and about a third as wide as pronotum (EW/PW= 1.31), with widest point at medial third. Parascutellar striole and striae well-impressed, slightly punctate; parascutellar striole short, not joining stria 1; striae 1–3 (and 4 on right elytron) reaching basal bead, 5–7 not reaching it. Interval 3 with three discal setiferous punctures on left elytron and two on right elytron, first pair of large, foveolate punctures in midst of interval 3, second pair of smaller, punctiform punctures adjoining stria 2, third pair of punctures lack, instead an additional large, foveolate puncture present in midst of interval 3 of left elytron between first and second punctures. Umbilicate setiferous series with 17 punctures on left elytron and 16 punctures on right elytron. ***Legs.*** Posterior side of profemur with one seta in basal third and one seta in medial third. Anterior side of left mesofemur ventrally with five, right one with four equidistant setiferous punctures. Anterior side of metafemur ventrally with two long setae, one in basal third and one in medial third. ***Male genitalia.*** Urite IX suboval, with proximal margin slightly asymmetrical and pointed (Fig. 7A). Median lobe of aedeagus in lateral view, with short basal bulb, long and broad shaft moderately constricted proximally, and a short, straight apex; median lobe in ventral view straight, about 3.5 times longer than wide; apical lamella (dorsal view) short, symmetrical, subacuminate at tip, with sides straight. Internal sac in lateral view (Fig. 8A) with ventral sclerite partly visible (as a short plate); same in ventral view (Fig. 10A), with dorsal sclerite situated proximally and surrounding ventral sclerite from behind, ventral sclerite obliquely situated, broadened distally. Right paramere less concave ventrally (Fig. 12A). ***Female genitalia.*** Unknown.

Habitat. The holotype was collected in a pitfall trap that was set (3 May–9 June 2005) at the end of a street leading to Stimenia Cave, west of Vathys Village (Maria Chatzaki pers. comm.). The habitat where the specimen was found consists of a homogenous degraded phrygana (Mediterranean open scrubland and grass community at low altitude). Approximate GPS coordinates of the location are: 36.9975 26.9607.

Distribution. Kalymnos Island (Greece, Dodecanese; Fig. 16).

2. *Platyderus* (*Eremoderus*) *weiratheri* Mařan, 1940

Figs 1B, 5A, 7B, 8B, 10B, 12B, 13A, 16, Table 1

Platyderus Weiratheri Mařan, 1940: 25 (type locality: "Lydien in montibus Tmolos" [= Bozdağlar], Turkey).

Note on type locality. The mount Bozdağlar (Ancient Greek name: Tmōlos), with maximal elevation 2159 m a.s.l., is situated in the southwestern part of the Anatolian Peninsula.

References. *Platyderus weiratheri*: Jedlička 1963: 22; Lorenz 1998: 375; Hovorka and Sciaky 2003: 523; Lorenz 2005: 396; Hovorka 2017: 760.

Type material. Should consist of two male and three female specimens (Mařan ibid.) all of them syntypes according to Art. 73.2.1. (ICZN 1999). From these specimens, we found only one male syntype with extracted genitalia, here designated as lectotype. This specimen and its genitalia (with missing urite) are glued on two separate white cards on the same pin. The specimen designated herewith as lectotype is labelled as follows: '♂ [w, p] // Tmolos-Gbg., Lydien, / West-Klainasien. / Weirather, Innsbruck [w, p] // TYPUS [r, p] // Mus. Nat. Pragae / Inv. 927 [o, h/p] // Platyderus Weiratheri m. Dr. Mařan det. [w, h&p] // lectotype label' [NMPC]. The depositories and present state of remaining four type specimens remain unknown.

Other material examined. Turkey: Bozdağlar (= Mount Tmolus) situated on territories of districts of İzmir, Manisa and Aydin: 1♂, 'Tmolos-Gbg., Lydien, / West-Kleinasien. / Weirather, Innsbruck // Platyderus spec. ? det. J. Müller (vergl. mit cyprius !) // Coll. Mus. / Vindob.' (NMW); 1♂, 1♀, 'Tmolos-Gbg., Lydien, / West-Kleinasien. / Weirather, Innsbruck // Coll. Mus. / Vindob.' (NMW); 2♂♂, 1♀, 'Tmolos-Gbg., Lydien, / West-Kleinasien. / Weirather, Innsbruck' (NMW); 1♂, 'Boz dağ, vt N / 1150–1200 m / 5–5–1995 // TURQUIE / Izmir / C. JEANNE // Collection / Machard' (cMAC); 3♀♀, 'TURKEY, vil. Izmir, Boz / dağlari, Boz dağ köy env. / 1500–1700 m a.s.l. / 30.5.–3.6.03, R.Lohaj lgt.' (NMNHS, cWR).

TME: 11 specimens. TGE: 2♂♂, 1♀.

Diagnosis. See "Diagnosis" of *P. chatzakiae* sp. nov.

Redescription. ***Habitus.*** Specimens of large size for *Platyderus* species (BL: 7.00–8.10 mm; BW: 2.35–2.60 mm), with rather elongate, moderately convex body (Fig. 1B). ***Measurements and ratios.*** See Table 1. ***Color and lustre.*** Body dorsally and ventrally dark reddish, head and pronotum mostly lighter than elytra, appendages (antennae, palpi and legs) rufous, lighter colored than dorsal surface. Integument moderately shiny, head and pronotum slightly shinier than elytra. ***Microsculpture and punctation.*** Pronotum without regular microreticulation. Elytral intervals and scutellum with distinct isodiametric sculpticells; basal margin and lateral gutter with such sculpticells less evident or without microsculpture. Ventral surface with hardly visible isodiametric (proepisternum) or slightly transverse sculpticells (abdominal ventrites at sides) or mostly sculpticells not apparent. Head with some punctures and wrinkles only clypeus and frons, labrum, disc and vertex without punctures and wrinkles. Pronotum in basolateral part coarsely and sensely punctate, basal punctures reaching or not reaching the anterior half laterally, disc and anteroapical part mostly smooth, anterior third medially finely punctate and wrinkled. Elytral intervals mostly with a row of punctures, rarely without punctation. Abdominal ventrites 1–5 wrinkled at sides. ***Head.*** One-third or narrower than pronotum wide (PW/HW= 1.32–1.44). Eyes slightly convex. Labrum subrectangular, slightly shorter than clypeus, with anterior margin concave. Frontoclypeal suture distinct in middle, indistinct at sides. Frontal furrows barely distinct, small and shallow. Paraorbital sulci straight, moderately deep, ending backwards slightly before level of posterior supraorbital pore. ***Thorax.*** Pronotum about one eighth to one quarter wider than long (PW/PL= 1.13–1.27), with widest point at second quarter. Anterior and posterior transverse impressions slightly distinct medially. Sides sinuate, convex medially and anteriorly, slightly to hardly concave posteriorly; anterior border lack in medial 1/10. Metepisternum about as long as wide, MA/MI= 0.95–1.02. ***Elytra.*** Elongate, about two thirds longer than wide (EL/EW= 1.63–1.71), two and a half times or longer than pronotum (EL/PL= 2.55–2.83), and a third wider than pronotum (EW/PW= 1.29–1.40), with widest point at medial third or third quarter. Parascutellar striole and striae well-impressed, more coarsely punctate than in *P. chatzakiae* sp. nov. and less coarsely than in *P. vanensis* sp. nov.; striole short, not joining stria 1; striae 1–6 reaching or almost reaching basal bead, 7 reduced before. Interval 3 with three discal setiferous punctures on each elytron. Umbilicate setiferous series consisting of 15–16 (rarely 17) punctures on each elytron. ***Legs.*** Posterior side of profemur with one seta in basal third and one seta in medial third. Anterior side of mesofemur ventrally mostly with 4 equidistant setiferous punctures, rarely with 3 or 5 punctures (Fig. 5A). Anterior side of metafemur ventrally with two long setae, one in basal third and one in medial third. ***Male genitalia.*** Urite IX with proximal margin almost asymmetrical (Fig. 7B). Median lobe of aedeagus in lateral view as in *P. chatzakiae*, with shaft little longer (Fig. 8B); median lobe in ventral view straight, about 3.5 times longer than wide (Fig. 10B); apical lamella (dorsal view) as in *P. chatzakiae*. Internal sac as in *P. chatzakiae*, only ventral sclerite narrowed toward both proximal and

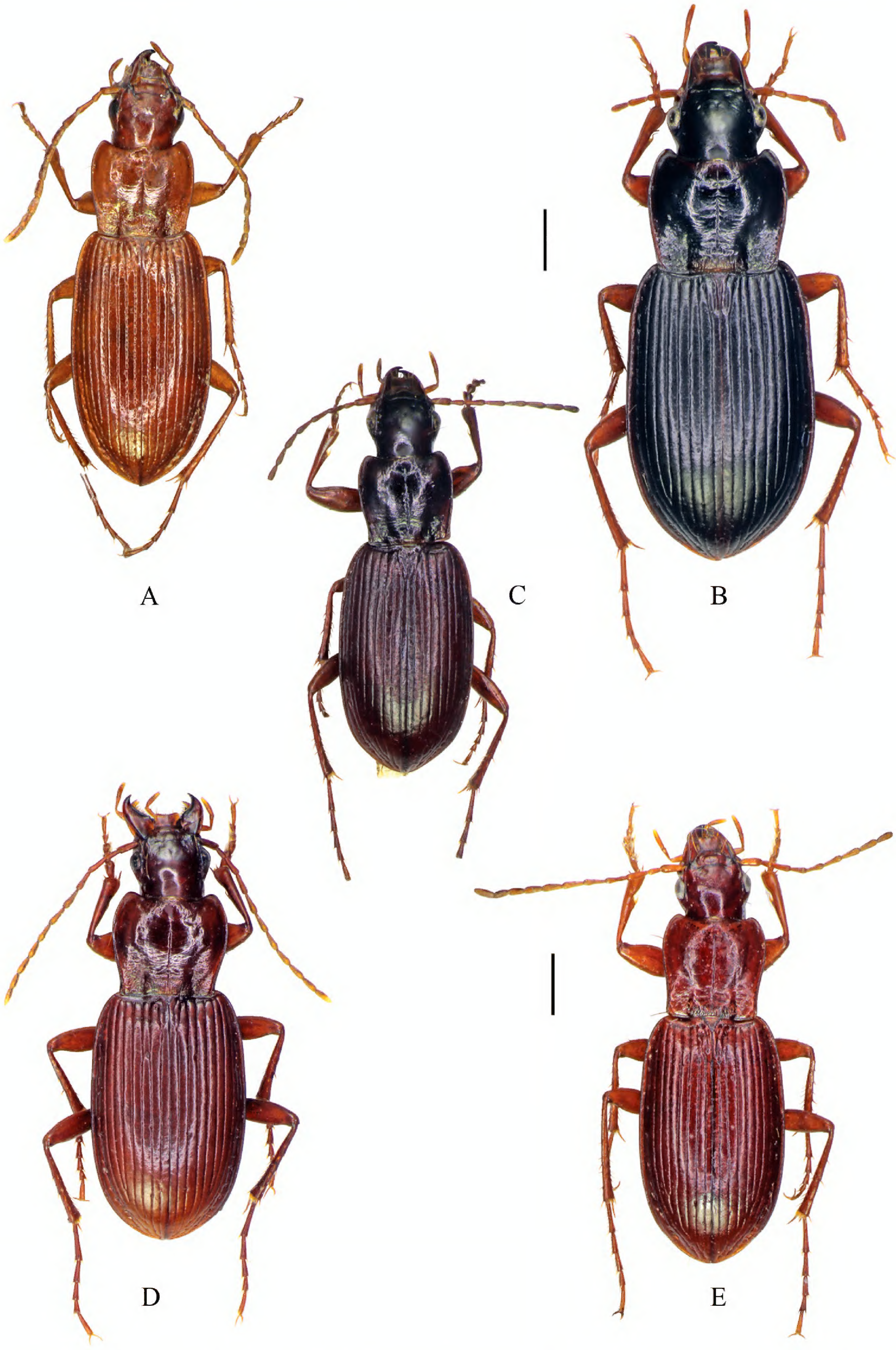

Figure 2. Dorsal habitus. **A.** *Platyderus* (*Eremoderus*) sp., female specimen, Karabet Pass, Turkey; **B.** *P.* (*E.*) *lassallei*, sp. nov., female paratype, E Qolqol, Mazandaran Province, Iran; **C.** *P.* (*E.*) *klapperichi*, sp. nov., holotype; **D.** *P.* (*E.*) *ledouxi* Morvan, 1974, male specimen, 10 km S Hasan Keif, Mazandaran Province, Iran; **E.** *P.* (*E.*) *taghizadehi* Morvan, 1974, male specimen, Tochal, Tehran Province, Iran. Scale bars: 1 mm.

distal ends, with widest point in middle (Fig. 10B). Right paramere on Fig. 12B. ***Female genitalia*** (Fig. 13A). Apical gonocoxite with pointed apex and two dorsolateral ensiform setae. Spermathecal canal connected in medial third of receptaculum.

Habitat. Nothing is known about bionomics of this species.

Distribution. Apparently endemic to the mountains of the Bozdağlar Mountain, in Southwest Turkey (Fig. 16).

"*iranicus-vanensis*" group

Diagnosis. Includes species with basal foveae of pronotum and adjacent lateral areas coarsely and densely punctate with punctures at sides usually reaching anterior half. The prosternum laterally and proepisternum also coarsely and densely punctate. The ventral sclerite of internal sac of median lobe in ventral view is elongate, relatively wide, with straight distal end; the same in lateral view is significantly widened anteriorly having maximum width at the distal third about three or more times larger than width at the proximal third (Figs 8C–F, 10C–F). Most specimens lack also the first elytral discal puncture and have apical gonocoxite with proximal dorsolateral ensiform seta finer than the distal seta.

In addition, the Iranian congeners of the "*iranicus-vanensis*" group differ from those of the "*davatchii*" group in: (1) sides of pronotum nearly straight to the posterior angles (vs. sides of pronotum concave to the posterior angles) and (2) pronotum appreciably wider than long (PW/PL >1.20, vs. PW/PL <1.20). For further differences between taxa of the group dealt with here and *P. lassallei* see "Diagnosis" under the "*lassallei*" species group.

Habitat. The habitats of the *Eremoderus*-species in the Zagros (Iran) consist mostly of subalpine slopes, partly near snowfields, and seldom of cultivated grasslands and small orchards. Outside the cultivated grasslands along the rivers and streams the vegetation is xerophilic. The altitude of the area where *P. felixi* sp. nov. was collected is appreciably lower than that of the localities of *P. iranicus* sp. nov.

"*iranicus*" subgroup

Notes. This complex includes two allopatric, high altitudinal species, *P. felixi* and *P. iranicus* with parascutellar striole, striae 1–8 scarcely punctate and moderately impressed and quite short and crooked right parameres (Fig. 12C, D).

3. *Platyderus* (*Eremoderus*) *felixi* sp. nov.

http://zoobank.org/17C88C87-FE7B-46B8-8602-F57CC6318FD0

Figs 1C, 5B, 7C, 8C, 10C, 12C, 13B, 17, Table 1

Type locality. Iran, Chahar Mahal va Bakhtiari Province, 10 km W Naghan Town, 31.9410, 50.6014, 1492–1505 m.

Notes on type locality. The distance from Naghan Town to the type locality is about 10 km in straight line and the direction is to the west of the town. The GPS coordinates and height indicated are more or less correct as they well correspond to the river that flows towards the village of Do Polan. In fact, the type locality is closer to the last village than to Naghan Town.

Type material. ***Holotype*** ♂, 'IRAN, / Chahār Mahāll vā Bachtīārī / 10km W Naghan Town / 31°56'27"N, 050°36'05.5"E / 1492–1505m, 02.04.2007 / leg. Jan Muilwijk' (HMIM). Paratypes: 4♀♀, labeled as holotype (cMUI); 1♂, 'IRAN, / Chahār Mahāll vā Bachtīārī / 10km W Naghan Town / 31°56'27"N, 050°36'05.5"E / 1492–1505m, 02.04.2007 / leg. R.F.L. Felix' (cFEL).

TME: 6 specimens. TGE: 2♂♂, 1♀.

Etymology. Latinized patronym name after Ron Felix (Berkel-Enschot, Netherlands), an enthusiastic coleopterologist working on the taxonomy of carabid beetles, with great collecting skills, who collected part of the type series of the new species.

Diagnosis. It is distinct from *P. iranicus* sp. nov. in the pronotum significantly wider than head (PW/HW ≥1.45, vs. PW/HW ≤1.45) and elytra noticeably less wide in relation to length (EL/EW ≤1.55, vs. EL/EW ≥1.55). In addition, median lobe of aedeagus (lateral view) of the new species is larger, with shaft broader and apex barely bent up (*P. iranicus* has significantly narrower shaft and apex more distinctly bent up; Fig. 8C, D).

Description. ***Habitus.*** Specimens of moderate size for *Platyderus* species (BL: 6.00–7.00 mm; BW: 2.20–2.50 mm), with relatively short, moderately convex body (Fig. 1C). ***Measurements and ratios.*** See Table 1. ***Color and lustre***. Integument uniformly reddish-brown, appendages somewhat lighter than body. Surface moderately shiny. ***Microsculpture and punctation.*** Disc of head with less distinct microsculpture. Pronotum with regular isodiametric sculpticells posterolaterally and slightly stretched isodiametric sculpticells anterolaterally, microsculpture faint to absent in middle. Ventral surface (excl. gula) microsculptured, sculpticells isodiametric (mentum, submentum, pro-, mes-, and metepisternum, prosternum and abdominal ventrites laterally) or slightly stretched isodiametric (genae, medial surface of prosternum, metasternum, abdominal ventrites medially and legs). ***Head.*** As wide as a half of pronotum (mean PW/HW= 1.49). Eyes moderately convex. Labrum subrectangular, as long as clypeus, with anterior margin straight. Frontoclypeal suture distinct in middle but very fine, lacking at sides. Frontal furrows shallow, punctiform. Paraorbital sulci moderately deep, ending slightly before or at level of posterior supraorbital pore. ***Thorax.*** Pronotum distinctly wider than long (mean PW/PL= 1.31), with widest point at second quarter. Anterior and posterior transverse impressions indistinct. Anterior bead present medially, very fine. Sides convex anteriorly, nearly straight posteriorly. Metepisternum slightly longer than wide, MA/MI= 0.90–0.95. ***Elytra.*** Cylindrical, one and a half time as long as wide (mean EL/EW= 1.52), wider and quite longer than pronotum (mean EW/PW= 1.31; mean EL/PL= 2.62). Parascutellar striole and striae

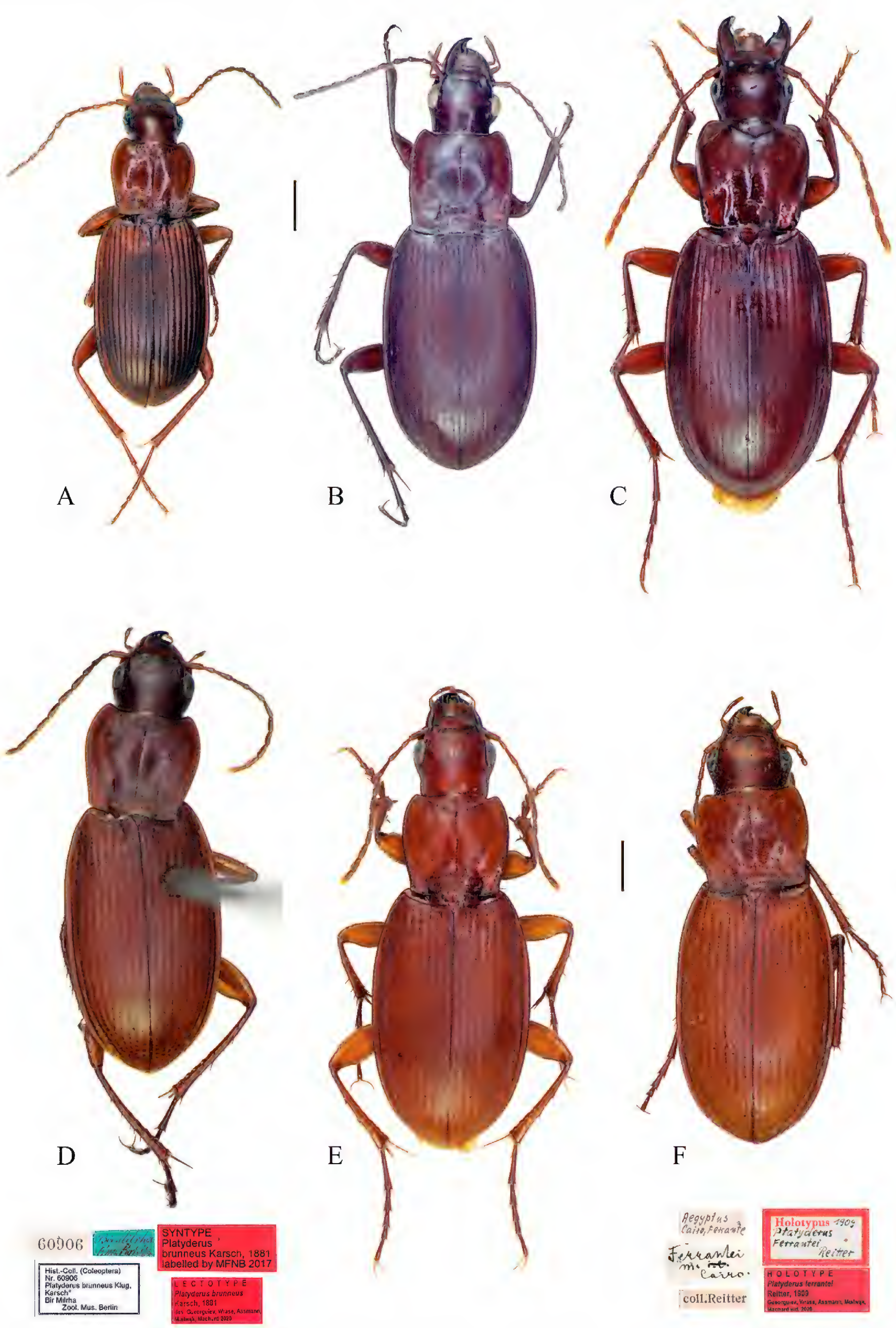

Figure 3. Dorsal habitus. **A.** *Platyderus* (*Eremoderus*) *afghanistanicus*, sp. nov., holotype; **B.** *P.* (*E.*) *arabicus*, sp. nov., holotype; **C.** *P.* (*E.*) *brunki*, sp. nov., holotype; **D.** *P.* (*E.*) *brunneus brunneus* Karsch, 1881, lectotype and its labels; **E.** *P.* (*E.*) *brunneus brunneus* Karsch, 1881, male specimen, 50 km W of Ben Gardane, Medenine Governorate, Tunisia; **F.** *P.* (*E.*) *brunneus ferrantei* Reitter, 1909, lectotype and its labels. Scale bars: 1 mm.

Table 1. Morphometric data for species of the '*weiratheri*' and '*iranicus-vanensis*' groups of *Platyderus*.

Species (number of samples)	BL/mm	BW/mm	PW/HW	PW/PL	PW/PA	PW/PB	PA/PB	EL/EW	EW/PW	EL/PL
P. weiratheri Mařan (6♂♂, 5♀♀)	7.00–8.10	2.35–2.60	1.32–1.44	1.13–1.27	1.32–1.41	1.09–1.19	0.81–0.89	1.63–1.71	1.29–1.40	2.55–2.83
P. weiratheri Mařan (mean)	7.52	2.50	1.38	1.20	1.37	1.15	0.84	1.67	1.32	2.64
P. chatzakii (1♂)	8.05	2.85	1.34	1.19	1.36	1.19	0.88	1.60	1.31	2.49
P. felixi sp. nov. (2♂♂, 4♀♀)	6.00–7.00	2.20–2.50	1.45–1.52	1.25–1.34	1.33–1.43	1.10–1.13	0.79–0.83	1.48–1.55	1.29–1.35	2.60–2.66
P. felixi sp. nov. (mean)	6.58	2.40	1.49	1.31	1.39	1.11	0.80	1.52	1.31	2.62
P. iranicus sp. nov. (19♂♂, 16♀♀)	4.30–6.65	1.50–2.30	1.32–1.45	1.21–1.31	1.30–1.42	1.10–1.24	0.82–0.93	1.55–1.69	1.24–1.34	2.50–2.77
P. iranicus sp. nov. (mean)	5.67	1.95	1.40	1.26	1.36	1.18	0.87	1.60	1.29	2.59
P. vanensis sp. nov. (11♂♂, 11♀♀)	6.85–8.40	2.25–2.70	1.30–1.43	1.13–1.24	1.32–1.41	1.14–1.29	0.82–0.95	1.61–1.73	1.22–1.36	2.52–2.74
P. vanensis sp. nov. (mean)	7.53	2.45	1.36	1.19	1.36	1.20	0.88	1.68	1.30	2.60
P. sp. (1♀, Karabet Pass)	7.05	2.25	1.34	1.12	1.34	1.18	0.88	1.76	1.36	2.67
P. vrabeci sp. nov. (1♂, 1♀)	7.30–7.45	2.40–2.50	1.38–1.42	1.21–1.25	1.41–1.42	1.17–1.21	0.83–0.85	1.63–1.66	1.32	2.63–2.71
P. vrabeci sp. nov. (mean)	7.38	2.45	1.40	1.23	1.42	1.19	0.84	1.65	1.32	2.67

For abbreviations in line 1, see "Abbreviations to measurements and ratios" (section "Material and methods").

moderately impressed, wide; striole short, not joining stria 1; striae 1–6 reaching basal bead, 7 reduced before. Following aberration exists in two specimens, striae 3 and 4 posteriorly, each of them fusing separately with stria 2 and joined stria reaches lateral gutter, otherwise striae posteriorly as in subgeneric description. Interval 3 with three or two minute discal setiferous punctures situated as follows: anterior puncture (in most specimens missing on one or both elytron) adjoining stria 2, in middle of interval 3 or adjoining stria 3, remaining two punctures adjoining stria 2. Umbilicate setiferous series mostly consists of 16 punctures on elytron, rarely with 17 punctures. ***Legs.*** Posterior side of profemur with one seta in basal third and one in medial third. Mesofemur with four setiferous punctures on anterior side ventrally (Fig. 5B). Anterior side of metafemur ventrally with two long setae, one in basal third and one in medial third. ***Male genitalia.*** Urite IX small, oval, with proximal margin slightly asymmetrical and rounded (Fig. 7C). Median lobe of aedeagus curved in lateral view, with short basal bulb, long and broad shaft moderately constricted proximally, and apex hardly reversely turned up; median lobe in ventral view straight, ca. 3.7 times longer than wide; apical lamella more or less asymmetrical. Internal sac in lateral view (Fig. 8C) with ventral sclerite distinctly broadened and rounded distally; same in ventral view (Fig. 10C), with dorsal sclerite forming a concave left protuberance and a convex right curve, and ventral sclerite narrow and completely straight. Right paramere rather short and crooked (Fig. 12C). ***Female genitalia*** (Fig. 13B). Apical gonocoxite with pointed apex and two dorsolateral ensiform setae. Spermathecal canal connected in medial third of receptaculum.

Comparisons. The new species lives in sympatry with *Platyderus* (s. str.) *umbratus* (Ménétriés, 1832). However, *P. felixi* has pronotum more coarsely punctate in basolateral parts with punctures almost reaching the lateral margin, mesotibia with four setiferous punctures on its anterior side ventrally, and short urite with apex more symmetrical (Fig. 7C), whereas *P. umbratus* possesses pronotum shallowly punctate in base with punctures mostly limited to the basal impressions, mesotibia with two setiferous punctures on its anterior side ventrally, and long urite with apex curved to left (as in Fig. 7O).

Habitat. The specimens were hand collected by R. Felix and J. Muilwijk close to the village Do Polan along the river course. The vegetation there consisted of (over)-grazed grassland, fields and small orchards; characteristic of a cultivated landscape.

Distribution. Southwest Iran: Central Zagros Mountain Chains (Chahar Mahal va Bakhtiari Province, Kiar County; Fig. 17).

4. *Platyderus* (*Eremoderus*) *iranicus* sp. nov.

http://zoobank.org/3C731C6C-346E-4E8A-B5F3-D2D0B3E27D97

Figs 1D, 5C, 8D, 10D, 12D, 13C, 17, Table 1

Type locality. Iran, Chahar Mahal va Bakhtiari Province, 7 km NE Naghan Town, 31.97472, 50.77694, 2400 m.

Type material. ***Holotype*** 1♂, 'IRAN, / Chahār Mahāll vā Bachtīārī / 7km NE Naghan Town / 31°58'29"N, 050°46'37"E 2400m / 03.04.2007, leg. Jan Muilwijk' (HMIM). Paratypes: 1♀, labelled as holotype (cMUI); 1♀, 'IRAN (Chahār Mahāll vā Bachtīārī) / Zagros Mts. / Boldaghi vill. (nr Choghaklor lake) / 3 km S Sibak, 2600–2700 m / 31°51'47"N, 50°55'24" E / (subalpine slopes with snowfields / under stones) / 20.IV.2018 Wrase & Laser [07]' (cWR); 1♂, 'IRAN (Chahār Mahāll vā Bachtīārī) / Zagros Mts., Zard Koh Mt. / Cheri pass 20 km W Samsami / 2775 m, 32°09'55"N/ 50°10'37"E / (subalpine slopes/under stones) / 21.IV.2018 Wrase & Laser [08]' (cWR); 5♂♂, 1♀, 'IRAN, Zagros Mts., P: / Chahar Mahal va / Bachtiari, Zard Koh Mt. / pass, subalpine slope // 2770m, 21.IV.2018 / 32°09'55"N/ 50°10'37"E / leg. M. Hartmann' (cNME); 10♂♂, 5♀♀, 32°09'55"N, 50°10'37"E Iran / Zagros Mts., p. Chahār Mahāll / vā Bachtīārī, Zard Koh Mts., pass / 20km W Samsami, subalpine / slopes 21.IV.2018 2.775m NN / leg.: Schnitter IR49' (NME); 12♂♂, 2♀♀, 'IRAN: Zagros Mts., p.Chahār Mahāll / vā Bachtīārī, Zard Koh Mts.,pass 20km / W Samsami, 32°09'55"N, 50°10'37"E / 2775m, 21.IV.2018, subalp. slopes / leg. A.Weigel #49' (NME); 1♀, 'IR Chaharmahal and / Bakhtiari Cheri pass / 4.vi.2018 3000m / 32°09'31"N, 50°10'47"E / Muilwijk J.' (cMUI); 1♂, 'IR Chaharmahal and / Bakhtiari Cheri pass / 5.vi.2018 2450m / 32°10'36"N, 50°10'06"E / Muil-

Figure 4. Dorsal habitus. **A.** *Platyderus* (*Eremoderus*) *insignitus insignitus* Bedel, 1902, male specimen, SW Tiznit, Sous-Massa Region, Morocco; **B.** *P.* (*E.*) *irakensis*, sp. nov., holotype; **C.** *P.* (*E.*) *jordanensis*, sp. nov., holotype; **D.** *P.* (*E.*) *languidus* (Reiche & Saulcy, 1855), lectotype and its labels; **E.** *P.* (*E.*) *languidus* (Reiche & Saulcy, 1855), male specimen, "Jerusalem Syria", Jerusalem District, Israel. Scale bars: 1 mm.

wijk J.' (cMUI); 9♀♀, 'IR Chahar Mahaal Va / Bakhtiari Chery pass / 31.v.2019 Muilwijk J. / 2950–3260 m / 32°10'51"N, 50°09'59"E (cMUI, HMIM); 1♂, 2♀♀, 'IRAN (Chahār Mahāll vā Bachtīārī) / Zagros Mts., 5 km SW Asad Abad / 32°20'30"N/ 50°32'59"E / ca 2400 m (subalpine slopes/ / under stones) / 19.IV.2018 Wrase & Laser [03]' (cWR); 3♂♂, 32°20'30"N, 50°32'59"E Iran / Zagros Mts., p. Chahār Mahāll / vā Bachtīārī, Asad Abad 5 km SW / snow field, high pasture / 19.IV.2018 2.500–2.770m NN / leg.: Schnitter IR 44' (NME); 1♂ (genitalia lost after study), 3♀♀, 'IRAN Zagros Mts., P: Chahar / Mahall va Bachtiari, Asad / Abad 5 km SW, 32°20'30"N, / 50°32'59"E snow field, high / pasture, 19.IV.2018, 2.500–/ 2.770m, leg. A. Weigel #18–04' (NME); 3♂♂, 'IRAN: Zagros Mts., p.Chahār Mahāll / vā Bachtīārī, Asad Abad 5 km SW, / 19.IV.2018, 32°20'30"N, 50°32'59"E / 2500–2770m, snow field, high / pasture leg. A. Weigel #44' (NME); 1♂, 'IRAN, Zagros Mts., P: / Chahar Mahal va / Bachtiari, Asad Abad / 5 km SW, 2500–2770m // 19.IV.2018, snow field / high pasture, 32°20'N / 30", 50°32'59"E / leg. M. Hartmann, #3/18' (NME); 4♂♂, 3♀♀, 'IR Esfahan Kamran Pass / 1.vi.2019 Muilwijl J. / 3000–3300m / 32°45'49"N, 50°02'34"E' (cMUI); 1♂, 'IR Esfahan Pashadagan / 2.vi.2019 / Muilwijl J. 3000–3300m / 32°45'48"N, 49°59'52"E' (cMUI).

TME: 72 specimens. TGE: 16♂♂, 3♀♀.

Etymology. Adjective, derived from the name of the country where the species was collected.

Diagnosis. See "Diagnosis" under *P. felixi* sp. nov.

Description. ***Habitus.*** Specimens of small size for *Platyderus* species (BL: 4.30–6.65 mm; BW: 1.50–2.30 mm), with relatively short, moderately convex body (Fig. 1D). ***Measurements and ratios.*** See Table 1. ***Color and lustre.*** Integument uniformly yellow-brown to reddish-brown, appendages somewhat lighter than body. Surface moderately shiny. ***Microsculpture and punctation.*** Clypeus, vertex and disc of head with reduced microsculpture. Pronotum with regular isodiametric sculpticells posterolaterally and scarcely-visible to absent microsculpture in middle and anteriorly. Ventral surface with microsculpture and dorsal punctation as in *P. felixi* sp. nov. ***Head.*** About two thirds as wide as pronotum (mean PW/HW= 1.37). Eyes moderately convex. Labrum subrectangular, as long as or slightly shorter than clypeus, with anterior margin straight. Frontoclypeal suture and frontal furrows as in *P. felixi* sp. nov. Paraorbital sulci moderately deep, ending before level of posterior supraorbital pore. ***Thorax.*** Pronotum wider than long (mean PW/PL= 1.27), with widest point at second quarter. Anterior and posterior transverse impressions indistinct. Anterior bead lacking in medial 1/10 to 1/8. Sides convex anteriorly, straight posteriorly. Metepisternum somewhat longer than wide, MA/MI= 0.9–1.0. ***Elytra.*** Cylindrical, one and a half times or more as long as wide (mean EL/EW= 1.61), wider than pronotum and relatively long in relation to pronotum length (mean EW/PW= 1.31; mean EL/PL= 2.66). Parascutellar striole and striae as in *P. felixi* sp. nov. Interval 3 with two or three minute discal setiferous punctures, anterior puncture being mostly absent. Umbilicate setiferous series consisting mostly of 15 or 16 punctures. ***Legs.*** Posterior side of profemur with one seta in basal third and one in medial third. Anterior side of mesofemur ventrally with four setiferous punctures (Fig. 5C). Anterior side of metafemur ventrally with two long setae, one in basal third and one in medial third. ***Male genitalia.*** Median lobe of aedeagus in lateral view as in *P. felixi* sp. nov., but significantly narrower, with shaft less protruding dorsally and more constricted proximally (Fig. 8D); median lobe in ventral view straight, ca. 3.7 times longer than wide; apical lamella nearly symmetrical (Fig. 10D). Internal sac in lateral view as in *P. felixi* sp. nov., but with ventral sclerite truncate distally; same in ventral view as in *P. felixi* sp. nov. Right paramere as that of *P. felixi* sp. nov. but somewhat finer (Fig. 12D). ***Female genitalia*** (Fig. 13C). Apical gonocoxite with blunt apex and two dorsolateral ensiform setae. Spermathecal canal connected in medial third of receptaculum.

Habitat. The holotype and one female paratype were collected along an artificial lake situated in a valley northwest of village Aliabad. They were caught at grassland with lots of stones situated along this lake. The vegetation there consisted of grassland, fields and small orchards – as a whole a cultivated landscape. Other ground beetles collected at this place, together with the new species, were *Carabus maurus osculatii* Villa, 1844, *Poecilus festivus* (Chaudoir, 1868) and *Amblystomus niger* (Heer, 1841).

Cheri Pass environments were represented by overgrazed grasslands with rocks and stones at lower altitudes and stone slopes with sparse vegetation and snow fields at higher altitudes. Similarly, Kamran Pass habitats were consisted of overgrazed grasslands at lower altitude and of stony (sub)alpine slopes with sparse vegetation and snow fields at higher altitudes.

Habitats around Asad Abad represent grasslands on subalpine slopes; specimens there were collected under stones, sometimes near edges of snowfields.

Distribution. Southwest Iran: Central Zagros Mountain Chains. So far, four isolated populations are known: (1) Borujen County; (2) Kuhrang County (type locality); (3) Shahr-e Kord County (locality southwest Asad Abad); (4) Fereydunshahr County (Kamran Pass), the first three in Chahar Mahal va Bakhtiari Province, the fourth one in Isfahan Province (near border area with Chahar Mahal va Bakhtiari Province).

Notes. The two specimens collected 7 km northeast of Naghan Town represent the nearest population of *P. iranicus* sp. nov. to the type locality of *P. felixi* sp. nov., ca. 17 km in a straight line (Fig. 17). The specimen from the environments of the Choghaklor Lake was collected together with three specimens of *Platyderus* (s. str.) *umbratus* (Men.).

The distance between the population from the type locality (near Cheri Pass) and that one southwest of Asad Abad is ca. 45 km in a straight line. On the other hand, the distance between Cheri Pass and locality northeast of Naghan Town is ca. 62 km in a straight line. Respectively, the distance between the locality southwest of Asad Abad and that one northeast of Naghan Town is about 47 km

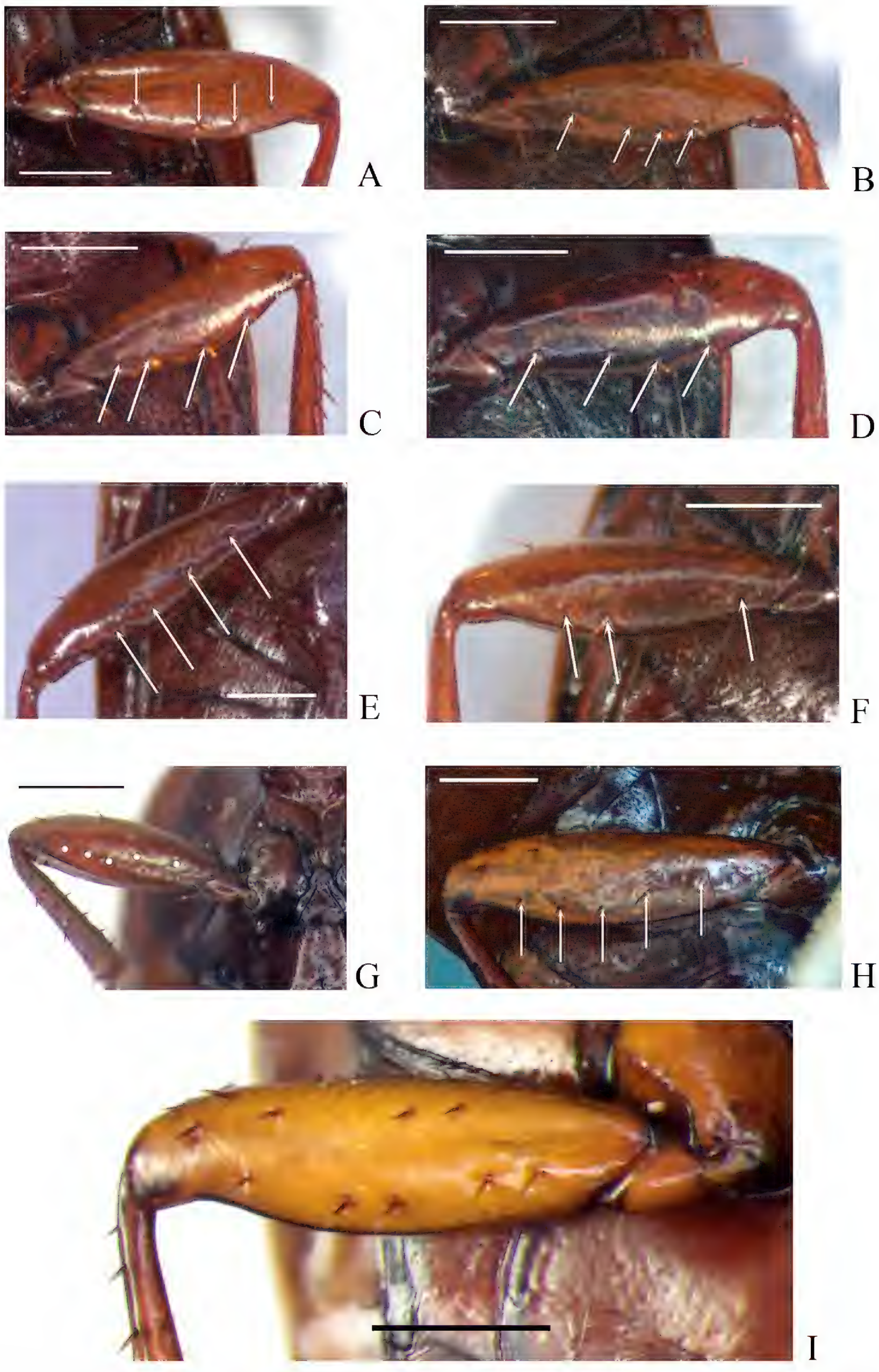

Figure 5. Mesofemora, anterior side (A–D: left mesofemur, E–I: right mesofemur; white arrows and dots indicate position of setiferous punctures). **A.** *Platyderus* (*Eremoderus*) *weiratheri* Mařan, 1940, female specimen, Boz dağ köy env., Izmir District, Turkey; **B.** *P.* (*E.*) *felixi*, sp. nov., topotype female paratype; **C.** *P.* (*E.*) *iranicus*, sp. nov., topotype female paratype; **D.** *P.* (*E.*) *lassallei*, sp. nov., female paratype, Iran, Mazandaran Province, E Qolqol; **E.** *P.* (*E.*) *klapperichi*, sp. nov., holotype; **F.** *P.* (*E.*) *taghizadehi* Morvan, 1974, male specimen, Tochal, Tehran Province, Iran; **G.** *P.* (*E.*) *afghanistanicus*, sp. nov., holotype; **H.** *P.* (*E.*) *brunneus ferrantei* Reitter, 1909, lectotype; **I.** *P.* (*E.*) *languidus* (Reiche & Saulcy, 1855), female specimen, Netanya 1.3.97, Central District, Israel. Scale bars: 0.5 mm.

in a straight line. The distance between the type locality (near Cheri Pass) and the locality of Kamran Pass is about 67 km in a straight line (the same distance is between the populations from the Kamran Pass and that of Asad Abad). The distance between the Kamran Pass (Ferey-dunshahr County) and the locality northeast of Naghan Town is about 112 km in a straight line.

"*vanensis*" subgroup

Notes. By its parascutellar striole and striae 1–8 more coarsely and densely punctate and more deeply impressed, the species from Eastern Turkey differ from those of the "*iranicus*" subgroup.

5. *Platyderus* (*Eremoderus*) *vanensis* sp. nov.

http://zoobank.org/5DAEBFAF-5211-4ED1-83DE-822DD8402705

Figs 1E, 8E, 10E, 13D, E, 16, Table 1

Type locality. Turkey, Van Province, Gevaş Town environs.

Note on type locality. Gevaş Town is situated on the southern shore of Van Lake. The holotype was perhaps collected in vicinities of the town.

Type material. ***Holotype***: 1♂, 'TURCIA or. Van / Gevas 29.6.1993 / lgt. J. Růžička // Platyderus / cf. / punctiger / (REICHE & SAULCY) / WRASE det. 2008' (cWR). Paratypes: 1♀, 'TURKEY OR. / GEVAS env., 2100–2600m / (CADIR DAGI) / 1993–06–29, Klíma lgt. // Platyderus / cf. / punctiger / (REICHE & SAULCY) / WRASE det. 2008' (NMNHS); 1♂, 1♀, 'Resadiye 1900m / TR: Bitlis 6.91 / coll. B. Lassalle' (cLAS); 1♀, 'CE TURKEY, prov. Bitlis / 38°37'N, 42°16'E 2290m / Şentepe env. / Nemrut Mt. – crater / 24.VI.08 lgt. E.Hajdaj // COLL. / E. & P. HAJDAJ / JEŽOV / Czech Republic' (cHAJ); 5♂♂, 2♀♀, 'TR, Bitlis, Yelkenli / Van lake, ca. 1800 m / ~ 38°28'N, 42°32'E / 21.IV.–20.V.2014 / pitfall, leg. C. Reuter' (NMNHS, cREU, cWR); 1♀, 'col de Buglan 1500m / TR Mus 6.88 / col. B. Lassalle' (cLAS); 1♂, 'E Turkey, Mus / 8km SE Solhan, Buglan / Gec., 1700–1800m / 38°56'N, 41°08'E 18. – / 20.VI.05 lgt. E.&P.Hajdaj' (cHAJ); 3♂♂, 5♀♀, 'TR, Bingöl / Muş / Buğlan Geçidi, 1640 m / 21.IV. – 11.V.2014 / pitfall, leg. C. Reuter' (NMNHS, cREU, cWR).

TME: 22 specimens. TGE: 4♂♂, 2♀♀.

Etymology. An adjective derived from the geographical name Van.

Diagnosis. The new species is most closely related to *P. vrabeci* sp. nov., but easily differs from it by the apical lamella of the median lobe (dorsal and ventral view) that is less symmetrical and shorter (Fig. 10E), conical shape of bursa copulatrix (Fig. 13D, E), darker coloration of the integument, elytral striae and striole more coarsely punctate and smaller value PW/PA (1.32–1.41, vs. 1.41–1.42).

Description. ***Habitus.*** Specimens of middle size for *Platyderus* species (BL: 6.85–8.40 mm; BW: 2.25–2.70 mm), with subelongate, slender body (Fig. 1E). ***Measurements and ratios.*** See Table 1. ***Color and lustre.*** Body dorsally and ventrally mostly reddish-brown, appendages (antennae, palpi and legs) lighter colored than body, some specimens from Buğlan Geçidi with elytra almost black, and head, pronotum and ventral surface reddish-brown. Integument rather shiny. ***Microsculpture and punctation.*** Pronotum and elytral intervals 1–5 (rarely also 6–7) without distinct sculpticells or with very faint ones, intervals 6–9 mostly (all specimens from Yelkenli) with distinct isodiametric sculpticells. Ventral surface mostly without visible sculpticells, sometimes with scarcely-visible isodiametric meshes. Pronotum coarsely and densely punctate in basal third and adjacent lateral areas, punctures at sides often reaching medial third. Abdominal ventrites 1–4 punctate at sides. ***Head.*** About two thirds as wide as pronotum (PW/HW= 1.30–1.43). Antennae long, with last three antennomeres exceeding base of pronotum. Eyes long, subconvex. Labrum subrectangular, with anterior margin slightly concave. Frontal furrows shallow, subfoveolate. Paraorbital sulci moderately deep, ending slightly before level of posterior supraorbital pore. ***Thorax.*** Pronotum wider than long (PW/PL= 1.13–1.24), widest point at anterior third. Anterior transverse impression barely distinct, posterior one distinct medially. Sides sinuate, convex anteriorly, concave posteriorly; anterior bead reduced in medial 1/10. Metepisternum slightly longer than wide, MA/MI= 0.87–0.93. ***Elytra***. Elongate, about one and two thirds as long as wide (EL/EW= 1.61–1.73), two and a half times as long as pronotum (EL/PL= 2.52–2.74), and one third wider than pronotum (EW/PW= 1.22–1.36), with widest point at medial fifth. Parascutellar striole and striae deeply impressed (specimens from Buğlan Geçidi with striae 7–8 less impressed than others); parascutellar striole short, not connected with stria 1. Interval 3 with three discal setiferous punctures. Umbilicate setiferous punctures consisting of 16–17 (rarely 18) each side. ***Legs.*** Posterior side of profemur with one seta in basal third and one in medial third. Mesofemur with three or four setiferous punctures (three specimens with two on one side) on anterior side ventrally. Anterior side of metafemur ventrally with two long setae, one in basal third and one in medial third. ***Male genitalia.*** Median lobe of aedeagus in lateral view, with elongate basal bulb, long and broad shaft moderately constricted proximally, and short, straight apex; median lobe in ventral view straight, about 3.4 times longer than wide; apical lamella (dorsal view) short, symmetrical, rounded at tip, with sides straight or slightly convex. Internal sac in lateral view (Fig. 8E) with ventral sclerite distinctly broadened and rounded distally; same in ventral view (Fig. 10E), with dorsal sclerite forming a slightly sclerotized and short left-sided protuberance and a convex and long right-sided curve, and ventral sclerite narrow and nearly straight (only just scarcely bent to left). ***Female genitalia*** (Fig. 13D, E). Apical gonocoxite with semi-pointed apex and two dorsolateral ensiform setae. Spermathecal canal connected in medial third of receptaculum.

Habitat. Christoph Reuter (CR) and Bernard Lassalle (BL) kindly provided us with information on habitat

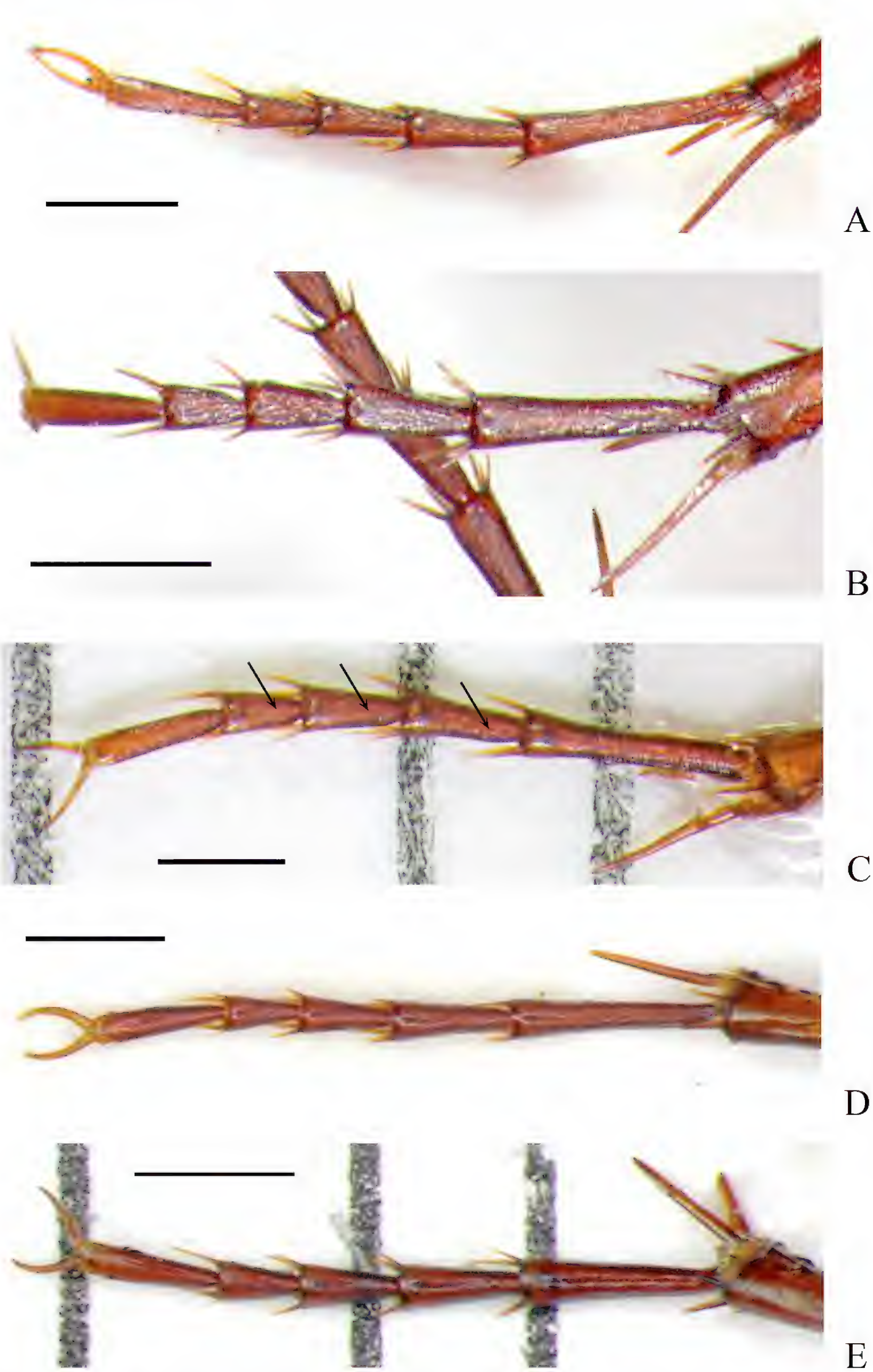

Figure 6. Metatarsus, dorsal view. **A.** *Platyderus* (*Eremoderus*) *brunneus brunneus* Karsch, 1881, left metatarsus, female specimen, Aziziyah, Jafara District, Libya; **B.** *P.* (*E.*) *brunneus ferrantei* Reitter, 1909, left metatarsus, female specimen, Holot Haluza, Southern District, Israel; **C.** *P.* (*E.*) *irakensis*, sp. nov., left metatarsus (black arrows indicate longitudinal grooves on metatarsomeres 2, 3 and 4), holotype; **D.** *P.* (*E.*) *jordanensis*, sp. nov., right metatarsus, holotype; **E.** *P.* (*E.*) *languidus* (Reiche & Saulcy, 1855), right metatarsus, male specimen, Nahal Prat, Judea and Samaria Area, Israel. Scale bars: 0.5 mm.

preferences. The specimens found by CR near Yelkenli were collected in a stunted oak forest. Underground is karst rock, in the middle of the tiny valley flows a small stream that still carries water, at least in spring. The series found by CR at Buğlan Geçidi, 1640 m, was collected in a semi-open landscape with a low, sparse oak forest of rather small, thin trees, a lot of scrubland, in between meadows, at least in some places, again karst rock, weathered rocks, and a lot of foliage. BL declare that he found a female specimen at Buğlan Geçidi, 1500 m, in "oak bushes"; same stated that, in Resadiye one male and one female of the new species was collected in small oak grove in a little valley.

Distribution. Turkey (provinces of Bingöl and Muş: Buğlan Geçidi; Bitlis Province; Van Province; Fig. 16). In Bitlis Province, the species inhabits the Nemrut volcanic massif west of Bitlis Town and the mountain region south of the Yelkenli (= Reşadiye) Bucağı. In Van Province, *P. vanensis* sp. nov. lives around Gevaş Town and in the Çadir Dağı, a massif situated south of the town aforementioned. In the border area of provinces of Bingöl and Muş, it lives along the pass Buğlan Geçidi.

Platyderus (*Eremoderus*) sp.

Fig. 2A, Table 1

Material examined. Turkey: 1♀, 'Col. Karabet 3000m / TR. Van / 18 VII 84 Machard / Collection Machard' (cMAC).

TME: 1 specimen. TGE: 0.

Diagnostic features. It is distinct from individuals of *P. vanensis* sp. nov. by flatter elytral intervals and less coarsely punctate elytral striae. Measurements and ratios shown on Table 1.

Habitat and bionomic notes. The specimen was collected by PM just before the pass Karabet Pass (eastern slope), on the road coming from Yukari-Narlica köyü village towards the pass. There is a large cirque on the left with many snowfields and streams descending from them; it was found in gravel between the rivulets, at an altitude of about 2800 m.

Distribution. Karabet Pass [= Karabet Geçidi] (Turkey, Eastern Anatolia Region, Van Province).

Notes. The single female remains unidentified due to the lack of a male specimen. In addition, the characters of the elytral intervals and striae are not sufficiently diagnostic to propose a new name for this form.

6. *Platyderus* (*Eremoderus*) *vrabeci* sp. nov.

http://zoobank.org/E82E9976-9F7E-4BE7-A545-FA359CEBCCF6

Figs 1F, 7D, 8F, 10F, 12E, 13F, 16, Table 1

Type locality. Turkey, Adıyaman Province, Nemrut Dağı, NE of Adıyaman.

Notes on type locality. The Nemrut Dağı, a mount in Southeastern Anatolia, elevated over 2150 m a.s.l., not far from the upper reaches of the Euphrates. It belongs to the Taurus Mountains and lies 86 kilometers northeast of Adıyaman in the province of the same name.

The GPS coordinates indicated on original labels are imprecise. They were taken from a map after the time of collecting (V. Vrabec, pers. comm.).

Type material. ***Holotype*** ♂, 'S Turkey: NEMRUT DAGI / (NE from Adiyaman), UTM: DC60 / 38.00N/38.35E, 1700–1900 m / mount. pastures, stone fields / 27.–28.IV.1997, V. Vrabec lgt.' (cWR). Paratype: 1♀, labelled as holotype (NMNHS).

TME: 2 specimens. TGE: 1♂, 1♀.

Etymology. Patronymic, named after Vladimír Vrabec, an entomologist interested in beetles and butterflies, who collected the type series of the new species.

Diagnosis. It differs from *P. vanensis* sp. nov. by the uniformly lighter coloration of the body, by the elytra and strioles much less coarsely and deeply punctate, and by slightly higher value of ratio PW/PA (1.41–1.42, vs. 1.32–1.41). The apical lamella in *P. vrabeci* sp. nov. is also more symmetrical and elongate (Fig. 10F) and the bursa copulatrix is rounded (Fig. 13F).

Description. ***Habitus.*** Specimens of relatively large size for *Platyderus* species (BL: 7.30–7.45 mm; BW: 2.40–2.50 mm), with elongate, moderately convex body (Fig. 1F). ***Measurements and ratios.*** See Table 1. ***Color and lustre.*** Body and appendages rusty red, head slightly darker than pronotum and elytra. Integument moderately shiny, head and pronotum shinier than elytra. ***Microsculpture and punctation.*** Pronotum without microreticulation. Elytral intervals and scutellum with distinct isodiametric sculpticells, basal margin and lateral gutterof elytra without evident microsculpture. Ventral surface largely with sculpticells not apparent or with scarcely-visible isodiametric (proepisternum, abdominal ventrites 1–5 laterally) or slightly transverse sculpticells (abdominal ventrite 6). Head with punctures and wrinkles only on posterior part of clypeus and areas in and around frontal furrows, rest of dorsal surface smooth. Pronotum coarsely punctate in basal third, with some punctures at sides reaching medial third; disc and apical third smooth. Elytral intervals with a row of irregular punctures. Abdominal ventrites smooth to very finely wrinkled at sides. ***Head.*** One-third or less as wide as pronotum (PW/HW= 1.38–1.42). Eyes moderately convex. Labrum subrectangular, as long as clypeus, with anterior margin slightly concave. Frontoclypeal suture distinct, impressed in middle, less distinct to obliterate at sides. Frontal furrows moderately distinct and impressed, subfoveolate. Paraorbital sulci straight, moderately deep, backward barely reaching posterior margin of eye, not reaching level of posterior supraorbital pore. ***Thorax.*** Pronotum about a quarter wider than long (PW/PL= 1.21–1.25), with widest point at second quarter. Anterior and posterior transverse impressions barely distinct. Sides sinuate, convex medially and anteriorly, concave posteriorly; bead of anterior border present throughout, rather fine; bead of posterior border present laterally and submedially, reduced to lacking at medial 1/10.

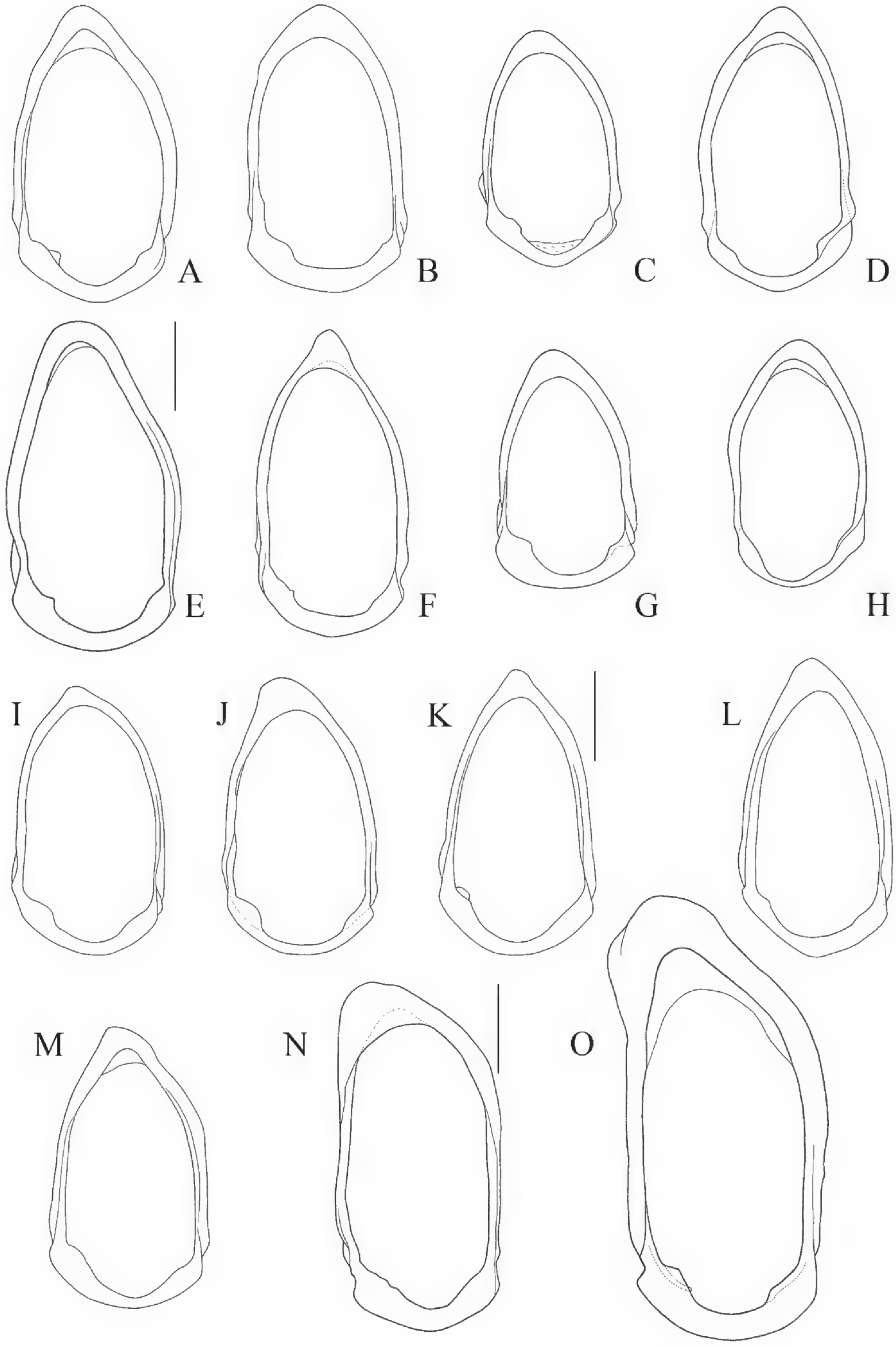

Figure 7. Urite, ventral view. **A.** *Platyderus* (*Eremoderus*) *chatzakiae*, sp. nov., holotype; **B.** *P.* (*E.*) *weiratheri* Mařan, 1940, E: topotype male specimen; **C.** *P.* (*E.*) *felixi*, sp. nov., holotype; **D.** *P.* (*E.*) *vrabeci*, sp. nov., holotype; **E.** *P.* (*E.*) *lassallei*, sp. nov., holotype; **F.** *P.* (*E.*) *ledouxi* Morvan, 1974, male specimen, 10 km S Hasan Keif, Mazandaran Province, Iran; **G.** *P.* (*E.*) *taghizadehi* Morvan, 1974, male specimen, Tochal, Tehran Province, Iran; **H.** *P.* (*E.*) *afghanistanicus*, sp. nov., holotype; **I.** *P.* (*E.*) *brunneus brunneus* Karsch, 1881, male specimen, 50 km W of Ben Gardane, Medenine Governorate, Tunisia; **J.** *P.* (*E.*) *brunneus ferrantei* Reitter, 1909, male specimen, Holot Haluza, Southern District, Israel; **K.** *P.* (*E.*) *jordanensis*, sp. nov., holotype; **L.** *P.* (*E.*) *languidus* (Reiche & Saulcy, 1855), lectotype; **M.** *P.* (*E.*) *languidus* (Reiche & Saulcy, 1855), male specimen, Nahal Prat, Judea and Samaria Area, Israel; **N.** *P.* (*Platyderus*) sp., male specimen, Boz Dağlar Mtn., Turkey; **O.** *P.* (*P.*) *reticulatus* (Chaudoir), male specimen, Tashehzeh, Nowshahr County, Mazandaran Province, Iran. Scale bars: 0.5 mm.

Metepisternum as long as wide, MA/MI= 0.95–1.01. ***Elytra***. Elongate, about two thirds as long as elytra wide (EL/EW= 1.63–1.66), two times and two thirds as long as pronotum (EL/PL= 2.63–2.71), and one and a third as wide as pronotum (EW/PW= 1.32), with widest point at beginning of third quarter. Parascutellar striole and striae well-impressed, moderately punctate (less coarsely than *P. weiratheri* and *P. vanensis* sp. nov.); parascutellar striole short, not joining stria 1; striae 1–6 reaching basal bead, 7 shortened a little before. Interval 3 with three discal setiferous punctures, as first lack on left eytron of paratype. Umbilicate setiferous series with 16 punctures on each side in holotype, with 17 punctures on left elytron and 15 ones on right elytron in paratype. ***Legs.*** Posterior side of profemur with one seta in basal third and one in medial third. Mesofemur with 3–4 setiferous punctures on anterior side ventrally. Anterior side of metafemur ventrally with two long setae, one in basal third and one in medial third. ***Male genitalia.*** Urite IX suboval, with proximal margin slightly asymmetrical and pointed (Fig. 7D). Median lobe of aedeagus in lateral view similar to that of *P. vanensis*, but slightly narrower and with apex a little longer (Fig. 8F); same in ventral view straight, about 3.2 – 3.3 times longer than wide (Fig. 10F); apical lamella (dorsal view) less symmetrical and more elongate than in *P. vanensis* sp. nov. Internal sac in lateral view (Fig. 8F) with ventral sclerite distinctly broadened and rounded distally; same in ventral view (Fig. 10F), with ventral sclerite somewhat more broadened distally than that of *P. vanensis* sp. nov. Right paramere on Fig. 12E. ***Female genitalia*** (Fig. 13F). Apical gonocoxite with semi-pointed apex and two dorsolateral ensiform setae. Spermathecal canal connected in medial third of receptaculum.

Habitat. Slopes with pastures and stone fields covered with snow patches at the time of collecting at an altitude of 1700–1900 m. Several trees in poor condition and a few flowering wild representatives of *Hyacintus* spp. were observed around the place of collecting (V. Vrabec, pers. comm.).

Distribution. Nemrut Dağı (Turkey, Southeastern Anatolia, Province of Adıyaman; Fig. 16).

"*lassallei*" species group

Notes. The species of the "*lassallei*" and the "*davatchii*" group share a synapomorphy, the distal end of the ventral sclerite of the median lobe is curved to the left (ventral view).

7. *Platyderus* (*Eremoderus*) *lassallei* sp. nov.

http://zoobank.org/8A300B91-AAEF-4283-8EDF-314FF907E684

Figs 2B, 5D, 7E, 8G, 10G, 12F, 14A, 17, Table 2

Type locality. Iran, Mazandaran Province, Nur County, between Nur City and Lavij Village, 500–1300 m.

Notes on type locality. Bernard Lassalle (pers. comm.) stated that the holotype was caught with soil traps in the period 8–25 June 2000. The place of the exposition of traps was: "south of Nur, on the road between Nur and Lavij, in a mixed forest, between 500–1300 m". However, having in mind that the northern outskirts of Lavij Village are situated at about 600 m altitude, we consider that the real altitude at which the specimen was caught is between 500 and 600 meters.

Type material. ***Holotype*** ♂, 'sud Nur 500–1300m / IR:Mazanderan 6.00 / coll. B.Lassalle' (cLAS). Paratypes: 1♂, 'IRAN, Prov. Mazandaran / [IR08–01] Sari County, / Mohammadabad, Elburz Mts., / N-Slope, NE Sangdeh, 1533m, / 36°04'06.6"N, 53°09'57.8"E, / Fagus forest, leaves debris, / sifted, 29.V.2008, leg. A. Pütz' (cWR); 1♀, 'IRAN, Prov. Mazandaran / [IR08–03A] Sari County, / Mohammadabad Elburz Mts., / N-Slope, E Qolqol, / 36°10'26.7"N, 53°16'29.2"E, / 916m, sifted, 30.V.2008, / leg. A. Pütz' (cPTZ); 1♂, 2♀♀, 'N.IRAN-Mazandaran prov. / Maji to Vemzela rd. 1360 m / 36°07'10.8"N, 53°11'50.9"E / 1–5.VI.2018, Václav Čutka leg.' (NMNHS); 1♂, 1♀, 'N.IRAN-Mazandaran prov. / Sárí-Talarem env, 36°13'21"N, 53°15'49.6"E, 965m, forest / 1–5.VI.2018, Václav Čutka leg.' (cKME); 1♂, 'N.IRAN-Mazandaran prov. / Galugah-Niala env. 1390 m / 36°37'38.8"N, 53°50'15.6"E / 4.VI.2018, Václav Čutka leg.' (cKME).

TME: 9 specimens. TGE: 5♂♂, 1 ♀.

Etymology. Latinized patronym based on the surname of Bernard Lassalle (Boissy-les-Perche, France), whose assiduous efforts in the field contributed substantial numbers of Carabid beetles that are very interesting or new to science.

Diagnosis. This species is distinct from the other species of the subgenus in the following set of characters: (1) large size of body (8.00–8.50 mm, Table 2); (2) deep black color of body and reddish-brown appendages; (3) dorsal surface of head and pronotum basal foveae with more extensive punctation (incl. micropunctation); (4) median lobe of aedeagus (lateral view) less noticeably curved basally, with apex not turned up.

In addition to the aforementioned characters, the new species differs from species of the "*davatchii*" group (which together with *P. lassallei* are the only *Eremoderus*–representatives that inhabit Alborz Range) in the wider pronotum (PW/PL >1.20, vs. PW/PL < 1.19) with sides to base more convex, the less long elytra (EL/EW <1.58–1.60, vs. EL/EW > 1.60), and the larger and longer median lobe (1.4 mm long and 4.3–4.4 times longer than wide, measurements taken ventrally). The median lobes of *P. ledouxi* and *P. taghizadehi* are proportionally smaller and less long (1.1–1.3 mm long and 3.7–3.9 times longer than wide) more clearly curved basally, with apex somewhat turned up (lateral view).

Description. ***Habitus.*** Specimens of large size for *Platyderus* species (BL: 8.05–8.50 mm; BW: 2.95–3.05 mm), with suboval and subconvex body (Fig. 2B). ***Measurements and ratios.*** See Table 2. ***Color and lustre***. Head, pronotum and elytra black, ventral part of body dark brown, appendages distinctly lighter than body, reddish-brown. Integument moderately shiny. ***Microsculpture***

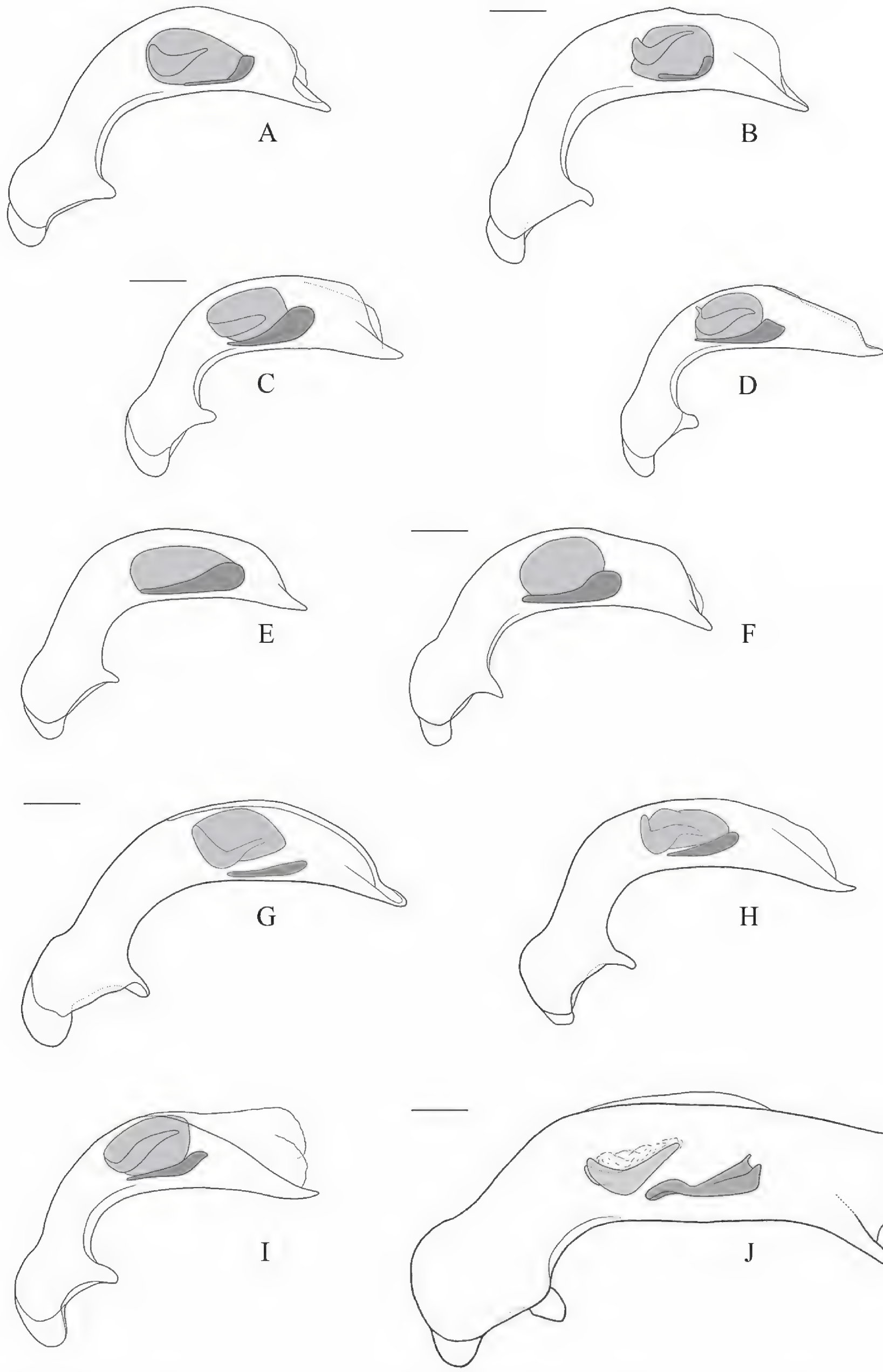

Figure 8. Median lobe of aedeagus, left lateral view. **A.** *Platyderus* (*Eremoderus*) *chatzakiae*, sp. nov., holotype; **B.** *P.* (*E.*) *weiratheri* Mařan, 1940, lectotype; **C.** *P.* (*E.*) *felixi*, sp. nov., holotype; **D.** *P.* (*E.*) *iranicus*, sp. nov., holotype; **E.** *P.* (*E.*) *vanensis*, sp. nov., holotype; **F.** *P.* (*E.*) *vrabeci*, sp. nov., holotype; **G.** *P.* (*E.*) *lassallei*, sp. nov., holotype; **H.** *P.* (*E.*) *ledouxi* Morvan, 1974, male specimen, 10 km S Hasan Keif, Mazandaran Province, Iran; **I.** *P.* (*E.*) *taghizadehi* Morvan, 1974, male specimen, Tochal, Tehran Province, Iran; **J.** *P.* (*Platyderus*) sp., male specimen, vicinity of Izmir City, Turkey. Scale bars: 0.2 mm.

and punctation. Disc of head with reduced sculpticells. Pronotum with regular isodiametric sculpticells posterolaterally and stretched isodiametric sculpticells anterolaterally, microsculpture very faint to absent on disc. Ventral surface largely with obsolete microsculpture, slightly stretched isodiametric sculpticells present on mentum, submentum and sternal parts laterally, slightly transverse sculpticells present on sternal part medially; gula, abdominal ventrites and legs without microreticulation. Prosternum laterally punctate. ***Head.*** About two thirds as wide as pronotum (mean PW/HW= 1.39). Antennae long, with last three antennomeres exceeding base of pronotum. Eyes large and convex. Labrum subrectangular, with anterior margin slightly concave. Frontal furrows slightly impressed, subfoveolate. Paraorbital sulci moderately deep, ending slightly before level of posterior supraorbital pore. ***Thorax.*** Pronotum distinctly wider than long (mean PW/PL= 1.23), widest at second quarter. Anterior transverse impressions barely distinct to indistinct, posterior one well-distinct medially. Sides convex anteriorly, slightly to barely concave posteriorly; bead of anterior margin present laterally, reduced in medial 1/10; bead of posterior margin present throughout (in one paratype reduced to absent in medial 1/8). Metepisternum as long as wide, MA/MI about 1.0. ***Elytra.*** Suboval, one-and-a-half times as long as wide (mean EL/EW= 1.51), wider and much longer in relation to pronotum (mean EW/PW= 1.38; mean EL/PL= 2.58). Stria 7 reaching or ending before. Elytral interval 3 with three discal setiferous punctures, anterior puncture adjoining stria 3, remaining two punctures adjoining stria 2. Umbilicate setiferous series of 16 punctures on each elytron. ***Legs.*** Posterior side of profemur with one seta in basal third and one in medial third. Anterior side of mesofemur ventrally (Fig. 5D) mostly with three-four setiferous punctures (one specimen with five punctures on one mesofemur, whereas another with two such also on one mesofemur). Anterior side of metafemur ventrally with two long setae, one in basal third and one in medial third. ***Male genitalia.*** Urite IX large, with right shoulder straight to apex and proximal margin widely rounded (Fig. 7E). Median lobe of aedeagus in lateral view arcuate ventrally, with apex almost straight; same in ventral view straight, ca. 4.3–4.4 times longer than wide, with apical lamella symmetrical. Internal sac in lateral view well-differentiated, with ventral sclerite long and narrow (Fig. 8G), in ventral view with dorsal sclerite forming a short left-sided curve and a long right-sided curve, and ventral sclerite straight, narrow, with distal end curved to left (Fig. 10G). Right paramere relatively large, rather concave ventrally (Fig. 12F). ***Female genitalia*** (Fig. 14A). Apical gonocoxite with semi-pointed apex and two dorsolateral ensiform setae. Spermathecal canal connected in medial third of receptaculum.

Comparisons. By dorsal coloration, form of pronotum and elytra, the new species is similar to *P. reticulatus* (Chaudoir, 1842), the only member of the nominotypical subgenus that lives in sympatry with *P. lassallei* on north slopes of the Alborz Range. However, the latter has the anterior side of mesofemur ventrally mostly with three-four setae (vs. two such setae in *P. reticulatus*) as well as completely different shapes of the urite and median lobe of aedeagus.

Habitat. According to the label data, the species occurs on northern slopes in *Fagus orientalis* or mixed forests in altitudes of about 500–1600 m a.s.l. Specimens were collected by sifting leaves debris or with pitfall traps.

Distribution. North Iran: Central Alborz Range (Fig. 17). The three records known until today come from three counties of the Province of Mazandaran, Nur County, Sary County and Galugah County. The areas between these counties are probably also populated by *P. lassallei* sp. nov.

"*davatchii*" species group

Diagnosis. This group includes *P. davatchii*, *P. ledouxi*, *P. taghizadehi* and *P. klapperichi* sp. nov., which are adapted to inhabit higher altitudes and open habitats in the Alborz Range (Fig. 17). Compared with *P. lassallei* sp. nov., the species in question have a more elongate and parallel body of smaller size and lighter color of the integument (see also "Diagnosis" under "*lassallei*" species group).

The species from the "*davatchii*" group differs from those of the "*iranicus*" subgroup, in: (1) the sides of pronotum are clearly concave toward the posterior angles (vs. sides of pronotum hardly concave or straight toward the posterior angles), (2) PW/PL < 1.20 (vs. PW/PL > 1.22), and (3) EL/EW ≥ 1.63 (vs. EL/EW ≤ 1.63).

Habitat. The habitat of the species of the "*davatchii*" group is similar to that of the two Iranian species from the Zagros Mountains (see "Habitat" under "*iranicus-vanensis*" species group). In the high mountain zone of Elburz the *Eremoderus*-species were collected in natural mountain pastures, covered with snow in winter.

Notes. Having not been able to examine the type material of Pierre Morvan, we treated *P. davatchii* Morvan, 1970, *P. taghizadehi* Morvan, 1974 and *P. ledouxi* Morvan, 1974 as valid species. Based on original descriptions and new material at hand, we were able to ascertain the identity of the last two species. Without available material for study, the identity of *P. davatchii* remains unknown for the time being.

8. *Platyderus* (*Eremoderus*) *davatchii* Morvan, 1970

Fig. 17

Platyderus davatchii Morvan, 1970: 194 (type locality: "l'Elburz, environs d'Alamut ; alt. 2 700 m...près d'un torrent, versan nord").

Notes on type locality. The type locality in the Iranian province of Qazvin, in Qazvin County, in the vicinities of Alamut Castle, 2700 m, may conditionally confine to the high area of the Central Alborz Range situated northward of the upper current of Shāh Rūd River, eastward of the Ovan Lake and westward of the upper currents of Seh Hazar River. It may concern the area situated north-northeast of ruins of the Alamut Castle.

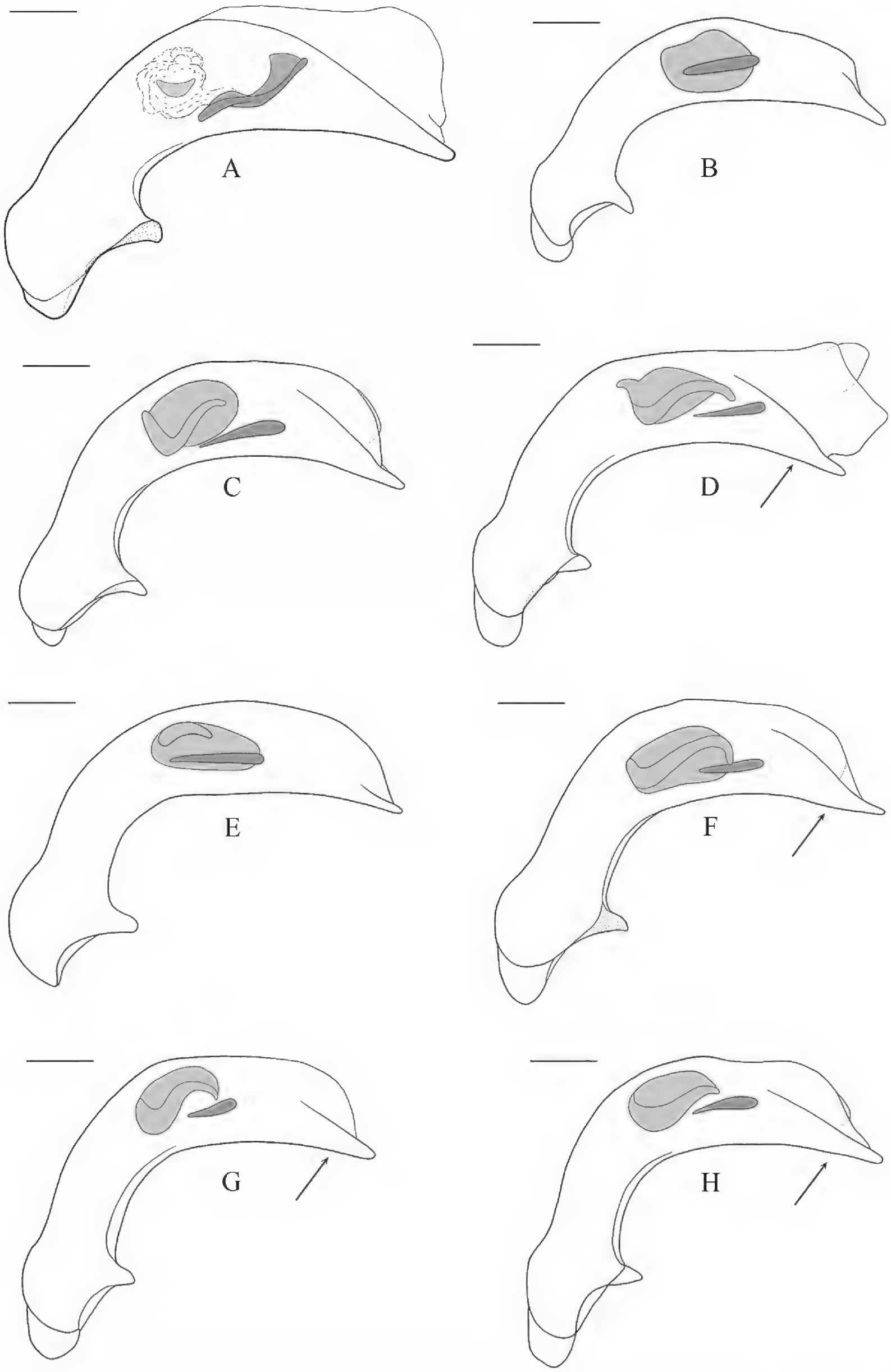

Figure 9. Median lobe of aedeagus, left lateral view (black arrows on D, F–H indicate convexity of ventral margin of apex of median lobe). **A.** *Platyderus* (*Platyderus*) sp., male specimen, Boz Dağlar Mtn., Turkey; **B.** *P.* (*Eremoderus*) *afghanistanicus*, sp. nov., holotype; **C.** *P.* (*E.*) *brunneus brunneus* Karsch, 1881, male specimen, 50 km W of Ben Gardane, Medenine Governorate, Tunisia; **D.** *P.* (*E.*) *brunneus ferrantei* Reitter, 1909, male specimen, Holot Haluza, Southern District, Israel; **E.** *P.* (*E.*) *insignitus insignitus* Bedel, 1902, male specimen, SW Tiznit, Sous-Massa Region, Morocco; **F.** *P.* (*E.*) *jordanensis*, sp. nov., holotype; **G.** *P.* (*E.*) *languidus* (Reiche & Saulcy, 1855), lectotype; **H.** *P.* (*E.*) *languidus* (Reiche & Saulcy, 1855), male specimen, Nahal Prat, Judea and Samaria Area, Israel. Scale bars: 0.2 mm.

References. *Platyderus davatchii*: Morvan 1970: Morvan 1974: 149; Lorenz 1998: 375; Hovorka and Sciaky 2003: 522; Lorenz 2005: 395; Azadbakhsh and Nozari 2015: 84; Hovorka 2017: 757.

Type material. ***Holotype*** ♀ preserved in private collection Pierre Morvan (Carentoir, France). Not examined.

Other material examined. None.

Habitat. The holotype was collected under a large stone near a stream, on a north slope at ca. 2700 m altitude.

Distribution. Only known from type location in North Iran: Central Alborz Range (Fig. 17).

Notes. Based on the habitus drawing and features noted in the original description (Morvan 1970: 194, fig. 6), *P. davatchii* is without doubt an *Eremoderus*-species. For the time being, it is the westernmost and the least known representative of the "*davatchii*" species group. Study of the holotype or topotypical male specimens of *P. davatchii* is a key issue that can help to decide whether its closest neighbor, *P. ledouxi*, is a separate species or its synonym. The distance between the population from Alamut Region (Qazvin County), referred to the former species, and the population south of Kelārdascht [= Hasankif; = Rudbarak] (Chalus County: Kelārdascht District), referred to the latter species is about 40–50 km in straight line.

The record about *P. davatchii* from "10 km S Hasan Keif" (Lohaj and Mlejnek 2007) actually concerns *P. ledouxi*.

9. *Platyderus* (*Eremoderus*) *klapperichi* sp. nov.

http://zoobank.org/8CA1EB54-9BEA-4E30-83C6-BF3B49C83A13

Figs 2C, 5E, 17, Table 2

Type locality. Iran, Alborz Mountains, Damavand, 2000 m.

Notes on type locality. The locality is situated in the Province of Tehran, in the Damavand County (Central Alborz Range). Data on the label are insufficient to locate whether the holotype has been collected in the surrounding area of the Damavand City or in foothills of the Mount Damavand.

Type material. ***Holotype*** ♂, 'IRAN, Demavand / 2000 m, Elbursgeb. / 2.VI.1960 / leg. J. Klapperich' (HNHM). TME: 1 specimen. TGE: 0.

Etymology. The species is named in honor of the German entomologist and collector of insects Johann Friedrich Klapperich (1913–1987), famous by its very successful expeditions to Southern China, the near and Middle East, and who collected the holotype of this new species.

Diagnosis. It differs from other representatives of the "*davatchii*" group by very small size of body (BL <7 mm) and pronotum less wide in relation to head (PW/HW= 1.27). In addition, it differs from *P. taghizadehi* by anterior side of mesofemur ventrally with four setiferous punctures (vs. three setiferous punctures in *P. taghizadehi*).

Description. ***Habitus.*** Specimen of small size for *Platyderus* species, with elongate and convex body (Fig. 2C). ***Measurements and ratios.*** See Table 2. ***Color and lustre.*** Body uniformly dark brown (castaneous), antennae, palpi and legs reddish-brown. Integument moderately shiny. ***Microsculpture and punctation.*** Microsculpture of head faint to absent on clypeus and frons, present on vertex. Pronotum with isodiametric sculpticells only posterolaterally, remaining surface without distinct microsculpture. Lateral parts of pro- and metasternum, pro-, mes-, and metepisternum, abdomen and legs with slightly stretched isodiametric sculpticells; ventral part of head, prosternum and metasternum medially without or with reduced sculpticells. Pronotum basal half with several transverse wrinkles. ***Head.*** Narrower than pronotum (PW/HW= 1.27). Frontal furrows slightly impressed, shapeless, wrinkled. Paraorbital sulci moderately deep, ending at level close to posterior supraorbital pore. Frons behind frontal furrows wrinkled. ***Thorax.*** Pronotum barely wider than long (PW/PL= 1.09), with widest point at second quarter. Anterior transverse impression distinct, posterior transverse one indistinct between adjacent wrinkles. Sides moderately curved apicad and basad, convexly anteriorly, concavely posteriorly; beads of anterior margin and posterior margin present laterally, very faint to reduced in medial 1/8. Metepisternum somewhat longer than wide, MA/MI about 0.8. ***Elytra.*** Cylindrical, about one and two thirds as long as wide (EL/EW= 1.70), wider and considerably longer than pronotum (EW/PW= 1.40; EL/PL= 2.60). Stria 7 ending at first umbilicate puncture on left elytron or after reaching first forming a kink connecting with the basal rim on the right elytron. Two or three discal setiferous punctures, anterior puncture near stria 3 on left elytron, and lacking on right elytron, remaining two punctures adjoining stria 2. Umbilicate setiferous series of 15 setiferous punctures on left elytron, with 16 punctures on right elytron. ***Legs.*** Posterior side of profemur with one seta in basal third and one in medial third. Anterior side of mesofemur ventrally with four setiferous punctures (Fig. 5E). Anterior side of metafemur ventrally with two long setae, one in basal third and one in medial third. ***Male genitalia.*** Unknown (see "Notes"). ***Female genitalia.*** Unknown.

Comparisons. The species can be easily distinguished from *P. lassallei* by characters noted in section "Diagnosis" (under *P. lassallei*).

Habitat. Like other representatives of the "*davatchii*" group, *P. klapperichi* inhabits high-mountain meadows around and above 2000 m a.s.l.

Distribution. North Iran, Central Alborz Range, most likely in vicinities of Damavand City (Fig. 17).

Notes. The aedeagus with attached parameres and urite IX were lost after the extraction.

10. *Platyderus* (*Eremoderus*) *ledouxi* Morvan, 1974

Figs 2D, 7F, 8H, 10H, 12G, 14B, 17, Table 2

Platyderus ledouxi Morvan, 1974: 149 (type locality: "l'Elburz, province du Mazandaran, massif du Soleyman, Roudbarak, alt: 1800 m, en forêt de *Fagus*").

Notes on type locality. The Takht-e Soleyman Massif, a subrange of the Central Alborz Range, is located in the Province of Mazandaran (Chalus County, Keraldasht

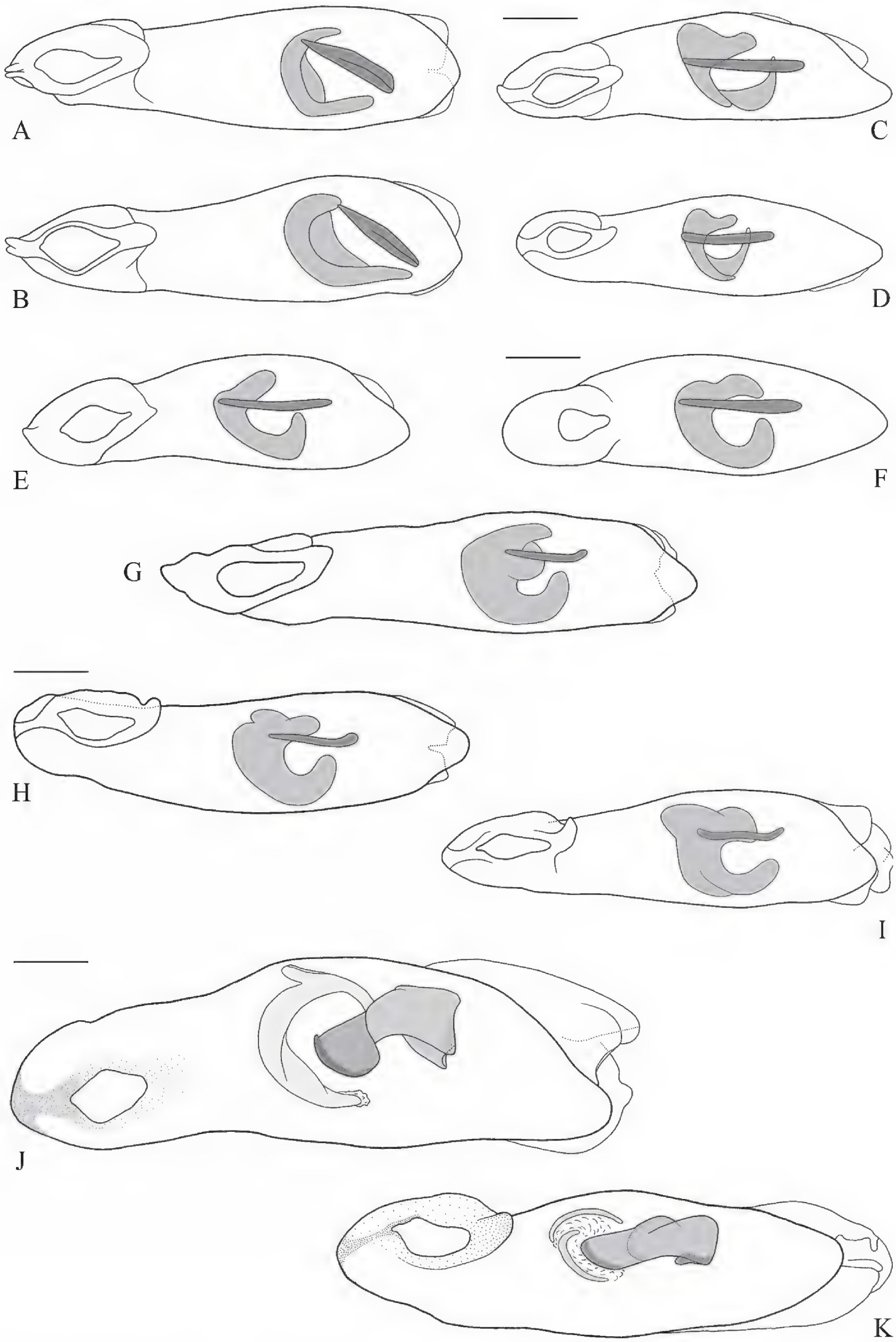

Figure 10. Median lobe of aedeagus, ventral view. **A.** *Platyderus* (*Eremoderus*) *chatzakiae*, sp. nov., holotype; **B.** *P.* (*E.*) *weiratheri* Mařan, 1940, lectotype; **C.** *P.* (*E.*) *felixi*, sp. nov., holotype; **D.** *P.* (*E.*) *iranicus*, sp. nov., holotype; **E.** *P.* (*E.*) *vanensis*, sp. nov., holotype; **F.** *P.* (*E.*) *vrabeci*, sp. nov., holotype; **G.** *P.* (*E.*) *lassallei*, sp. nov., holotype; **H.** *P.* (*E.*) *ledouxi* Morvan, 1974, male specimen, 10 km S Hasan Keif, Mazandaran Province, Iran; **I.** *P.* (*E.*) *taghizadehi* Morvan, 1974, male specimen, Tochal, Tehran Province, Iran; **J.** *P.* (*Platyderus*) sp., male specimen, vicinity of Izmir City, Turkey; **K.** *P.* (*P.*) sp., male specimen, Boz Dağlar Mtn., Turkey. Scale bars: 0.2 mm.

Table 2. Morphometric data for species of the '*lassallei*', '*davatchii*' and '*afghanistanicus*' groups of *Platyderus*.

Species (number of samples)	BL/mm	BW/mm	PW/HW	PW/PL	PW/PA	PW/PB	PA/PB	EL/EW	EW/PW	EL/PL
P. lassallei sp. nov. (2♂♂, 1♀)	8.05–8.50	2.95–3.05	1.37–1.41	1.23–1.24	1.39–1.40	1.16–1.18	0.83–0.84	1.49–1.55	1.36–1.41	2.51–2.62
P. lassallei sp. nov. (mean)	8.27	3.00	1.39	1.23	1.40	1.17	0.84	1.51	1.38	2.58
P. ledouxi Morvan (2♂♂, 1♀)	7.35–7.90	2.45–2.55	1.43–1.51	1.13–1.16	1.43–1.49	1.23–1.28	0.84–0.88	1.63–1.69	1.32–1.34	2.50–2.59
P. ledouxi Morvan (mean)	7.53	2.52	1.48	1.15	1.46	1.25	0.86	1.67	1.33	2.55
P. taghizadehi Morvan (1♂, 1♀)	7.10–7.20	2.40	1.31–1.33	1.06–1.12	1.34–1.36	1.13–1.22	0.83–0.91	1.65–1.68	1.41–1.42	2.47–2.67
P. taghizadehi Morvan (mean)	7.15	2.40	1.32	1.09	1.35	1.18	0.87	1.67	1.42	2.57
P. klapperichii sp. nov. (1♂)	6.60	2.20	1.27	1.09	1.38	1.15	0.83	1.70	1.40	2.60
P. afghanistanicus sp. nov. (1♂)	6.80	2.25	1.40	1.24	1.49	1.24	0.83	1.63	1.37	2.78

For abbreviations in line 1, see "Abbreviations to measurements and ratios" (section "Material and methods").

District). For the type locality Morvan indicated as biotope a beech forest in the vicinity of Rudbarak village, situated at ca. 1800 m altitude. This site lies in the upper valley of the Sardabrud River, northeast of the Takht-e Suleyman Massif.

References. *Platyderus davatchii*: Morvan 1970: Lohaj and Mlejnek 2007: 12. *P. ledouxi*: Lorenz 1998: 375; Hovorka and Sciaky 2003: 522; Lorenz 2005: 396; Azadbakhsh and Nozari 2015: 84; Hovorka 2017: 758.

Type material. ***Holotype*** ♂ in MNHN, not examined; paratype ♀ in private collection Pierre Morvan (Carentoir, France), not examined.

Other material examined. Iran: Mazandaran Province: 1♂, 'N Iran p. Mazandarán / 10 km S Hasan Keif / 2300m 3625N 5102E [36°25'N, 51°02'E] / 17.VI.2000 lgt. Hajdaj E.P. // Collectio / Hajdaj // Platyderus / cf. / davatchii Morv. / D.W. Wrase det. 01' (cHAJ); 1♂, 1♀, 'IR Mazandaran 10km SW / Rudbarak 36°24'00.1"N, 51°2'07.5"E 2500m / 16.06.17 Seiedy/Muilwijk' (cMUI).

TME: 3 specimens. TGE: 2♂♂, 1♀.

Diagnosis. Similar to P. *taghizadehi*, but differs from it in pronotum much wider than head (PW/HW >1.40), with apex more constricted compared with widest point (PW/PA >1.40), elytra in relation to pronotum narrower (EW/PW <1.38), and anterior side of mesofemur ventrally with four setiferous punctures. Male specimens of *P. ledouxi* can be additionally distinguished from males of *P. taghizadehi* by median lobe at lateral view larger (1.2–1.3 mm, vs. 1.1–1.2 mm, with a longer shaft (Fig. 8H).

Redescription (based on non-type material). ***Habitus.*** Specimens of moderate size for *Platyderus* species (BL: 7.35–7.90 mm; BW: 2.45–2.55 mm), with elongate and subconvex body (Fig. 2D). ***Measurements and ratios.*** See Table 2. ***Color and lustre.*** Integument uniformly dark brown, appendages barely lighter than body. Surface moderately shiny. ***Microsculpture and punctation.*** Pronotum with regular isodiametric sculpticells posterolaterally and slightly transverse ones anterolaterally, microsculpture faint to absent in middle. Ventral surface (excluding gula) microsculptured, mentum, submentum and proepisternum with regular isodiametric microsculpture, abdominal ventrites and femora with slightly stretched isodiametric sculpticells. ***Head.*** Significantly narrower than pronotum (mean PW/HW= 1.48). Antennae long, with last three antennomeres exceeding base of pronotum. Eyes long, subconvex. Labrum subrectangular, with anterior margin slightly concave. Frontal furrows small, shallow, subfoveolate. Paraorbital sulci moderately deep, ending at level of posterior supraorbital pore or lightly before. ***Thorax.*** Pronotum slightly wider than long (mean PW/PL= 1.15), widest at second quarter. Anterior and posterior transverse impressions indistinct. Sides rather convex anteriorly, fairly concave posteriorly; mean PW/PA= 1.46, mean PW/PB= 1.25; bead of anterior margin present laterally, reduced in medial 1/8 to 1/10; bead of posterior margin reduced to absent in medial 1/8. Metepisternum slightly longer than wide, MA/MI about 0.9. ***Elytra.*** Long, cylindrical, about one and two thirds as long as wide (mean EL/EW= 1.67), one time and a third as wide as pronotum (mean EW/PW= 1.33; mean EL/PL= 2.55). Stria 7 reaching basal margin. Three elytral discal setiferous punctures in interval 3 (one specimen with four punctures on one elytron, as an additional puncture exists at fourth sixth, between second and third normal punctures), anterior puncture usually adjoining stria 3 (in two specimens adjoining stria 2 on one elytron), remaining two punctures adjoining stria 2 (in specimens from Rudbarak env., right elytron with medial pore adjoining stria 3). Umbilicate setiferous series of 16–17 punctures on each elytron (one specimen with 18 punctures on one elytron). ***Legs.*** Posterior side of profemur with one seta in basal third and one seta in medial third. Anterior side of mesofemur ventrally with four setiferous punctures. Anterior side of metafemur ventrally with two long setae, one in basal third and one in medial third. ***Male genitalia.*** Urite IX elongate, suboval, with proximal margin rather pointed (Fig. 7F). Median lobe of aedeagus in lateral view with shaft longer than in *P. taghizadehi*, and significantly more curved than in *P. lassallei*, and with apex turned up; median lobe in ventral view straight, ca. 3.85 times longer than wide, with apical lamella nearly symmetrical. Internal sac in lateral view (Fig. 8H) with ventral sclerite elongate, widened medially and distally; same in ventral view (Fig. 10H) with dorsal sclerite forming two left-sided protuberances and a large right-sided curve, and ventral sclerite narrow, straight, with distal end curved to left. Right paramere thin, concave ventrally (Fig. 12G). ***Female genitalia*** (Fig. 14B). Apical gonocoxite with blunt apex and two dorsolateral ensiform setae. Spermathecal canal connected in medial third of receptaculum.

Habitat. All specimens above examined were collected in open places at high altitudes between 2300 m and

2700 m a.s.l. The specimens collected by JM in June 2017 have been caught under stones in a high-mountain meadow covered with lots of flowers, without bushes or trees. The place was definitely not dry during the time of visiting and perhaps covered with snow a few weeks before.

The type series of *P.* (*Eremoderus*) *ledouxi* and *P.* (*Platyderus*) *chodjaii* Morvan, 1974 were collected together (cfr. Morvan 1974), demonstrating that the two species occur sympatrically.

Distribution. North Iran: the Central Alborz Range, in area of the upper valley of Sardabrud River, northeast of the Takht-e Suleyman Subrange (Fig. 17).

Notes. Although not able to study the holotype, based on the original description of *P. ledouxi* and the illustrations of the median lobe of aedeagus and internal sac (Morvan 1974: 148–149, figs 17–24), we have no doubt that the material examined belongs to this species.

See also "Notes" under *P. davatchii* Morvan.

11. *Platyderus* (*Eremoderus*) *taghizadehi* Morvan, 1974

Figs 2E, 5F, 7G, 8I, 10I, 12H, 14C, 17, Table 2

Platyderus taghizadehi Morvan, 1974: 147 (type locality: "l'Elburz, massif du Sutak-kuh, Dizine 3500 m").

Notes on type locality. The Mount Sutak Kuh is situated in the province of Mazandaran (southwestern part of Nur County), and lies in the Central Alborz Range, at ca. 3500 m altitude. Its approximate GPS coordinates are 36.153, 51.456, referring to a point situated ca. 300 m higher than the height Morvan mentioned (ibid.). The type locality locates somewhere between the Sutak Kuh Peak, in the north, and the Dīzīn Ski Resort, in the south. Roughly, it may be defined as a site in the plot Kandovān Tunnel – Āzād Kuh Peak – Kholeno Lake – Dīzīn Ski Resort. Spatially, it is a point geographically situated midway between the type localities of *P. ledouxi* (vicinities of Rudbarak) and *P. klapperichi* sp. nov. (vicinities of Damavand City).

References. *Platyderus taghizadehi:* Lorenz 1998: 375; Hovorka and Sciaky 2003: 523; Lorenz 2005: 396; Azadbakhsh and Nozari 2015: 84; Hovorka 2017: 759.

Type material. ***Holotype*** ♂ in private collection Pierre Morvan (Carentoir, France). Not examined.

Other material examined. Iran: Tehran Province: 1♀, 'IR Alburz Dizin / 36°2'00.6"N, 51°26'00.5"E / 3300–3600m 10.06.17 / Muilwijk J // Platyderus taghizadehi / Morvan / Muilwijk 2017' (cMUI); 1♂, 'IR Tehran Tochal / 35°53'26.2"N, 51°24'25.1"E / 3550m 27.06.17 / Seiedy/Muilwijk // Platyderus taghizadehi / Morvan / Muilwijk 2017' (cMUI).

TME: 2 specimens. TGE: 1♂, 1♀.

Diagnosis. A species of medium size for *Platyderus*, with anterior side of mesofemur ventrally with three setiferous punctures. It is distinct from the closely related *P. ledouxi* by pronotum about a third wider than head (PW/HW= 1.31–1.33), with apex compared with widest point less constricted (PW/PA <1.40), and elytra in relation to pronotum significantly wider (EW/PW >1.38). See also "Diagnosis" under *P. ledouxi*.

Redescription (based on non-type material). ***Habitus.*** Moderately large-sized specimens for *Platyderus* species (BL: 7.10–7.20 mm; BW: 2.40 mm), with elongate and slender body (Fig. 2E). ***Measurements and ratios.*** See Table 2. ***Color and lustre***. Integument of body orange-brown, appendages slightly lighter than body. Surface moderately shiny. ***Microsculpture and punctation.*** Pronotum largely with reduced sculpticells or without microsculpture, traces of isodiametric sculpticells present only laterally. Ventral surface (excluding gula and prosternal process) microsculptured, genae, mentum, submentum, proepisternum and ventrites 2–3 medially with regular isodiametric meshes, abdominal ventrites laterally and legs with slightly stretched isodiametric sculpticells. Prosternum scarcely punctate. ***Head.*** Two thirds as wide as pronotum (mean PW/HW= 1.32). ***Head.*** Significantly narrower than pronotum (mean PW/HW= 1.48). Antennae long, with last three antennomeres exceeding base of pronotum. Eyes long, little convex. Labrum subrectangular, with anterior margin concave. Frontal furrows small, subfoveolate. Paraorbital sulci moderately deep, ending slightly before level of posterior supraorbital pore. ***Thorax.*** Pronotum sub-quadrate, barely wider than long (mean PW/PL= 1.09), widest at second quarter. Anterior and posterior transverse impressions indistinct. Sides rather sinuate, convex anteriorly, concave posteriorly; mean PW/PA= 1.35, mean PW/PB= 1.18; bead of anterior margin present laterally, reduced in medial 1/6; bead of posterior margin reduced to absent in medial 1/5 to 1/3. Metepisternum longer than wide, MA/MI about 0.9. ***Elytra.*** Long, cylindrical, one and two thirds as long as wide (mean EL/EW= 1.67), wider and much longer than pronotum (mean EW/PW= 1.42; mean EL/PL= 2.57). Stria 7 not reach basal margin. Elytral interval 3 with three discal setiferous punctures (specimen from Dizin with four punctures on left elytron, as an additional one between second and third normal puncture) located as follows: anterior puncture adjoining stria 2, stria 3 or in middle of interval 3, medial puncture adjoining stria 2 or in midst of interval 3, posterior puncture adjoining stria 2. Umbilicate setiferous series consisting of 16 punctures on each elytron in specimen from Tochal, and with 15 punctures on each elytron in specimen from Dizin. ***Legs.*** Posterior side of profemur with one seta in basal third and one in medial third. Mesofemur with three setiferous punctures on anterior side ventrally (Fig. 5F), but one specimen has two punctures on one mesofemur. Anterior side of metafemur ventrally with two long setae, one in basal third and one in medial third. ***Male genitalia.*** Urite IX small, suboval, with proximal margin slightly asymmetrical (Fig. 7G). Median lobe of aedeagus in lateral view with shaft shorter than that in *P. ledouxi* and more curved than that in *P. lassallei* sp. nov., and with apex turned up; median lobe in ventral view straight, ca. 3.7 times longer than wide, with apical lamella slightly asymmetrical. Internal sac

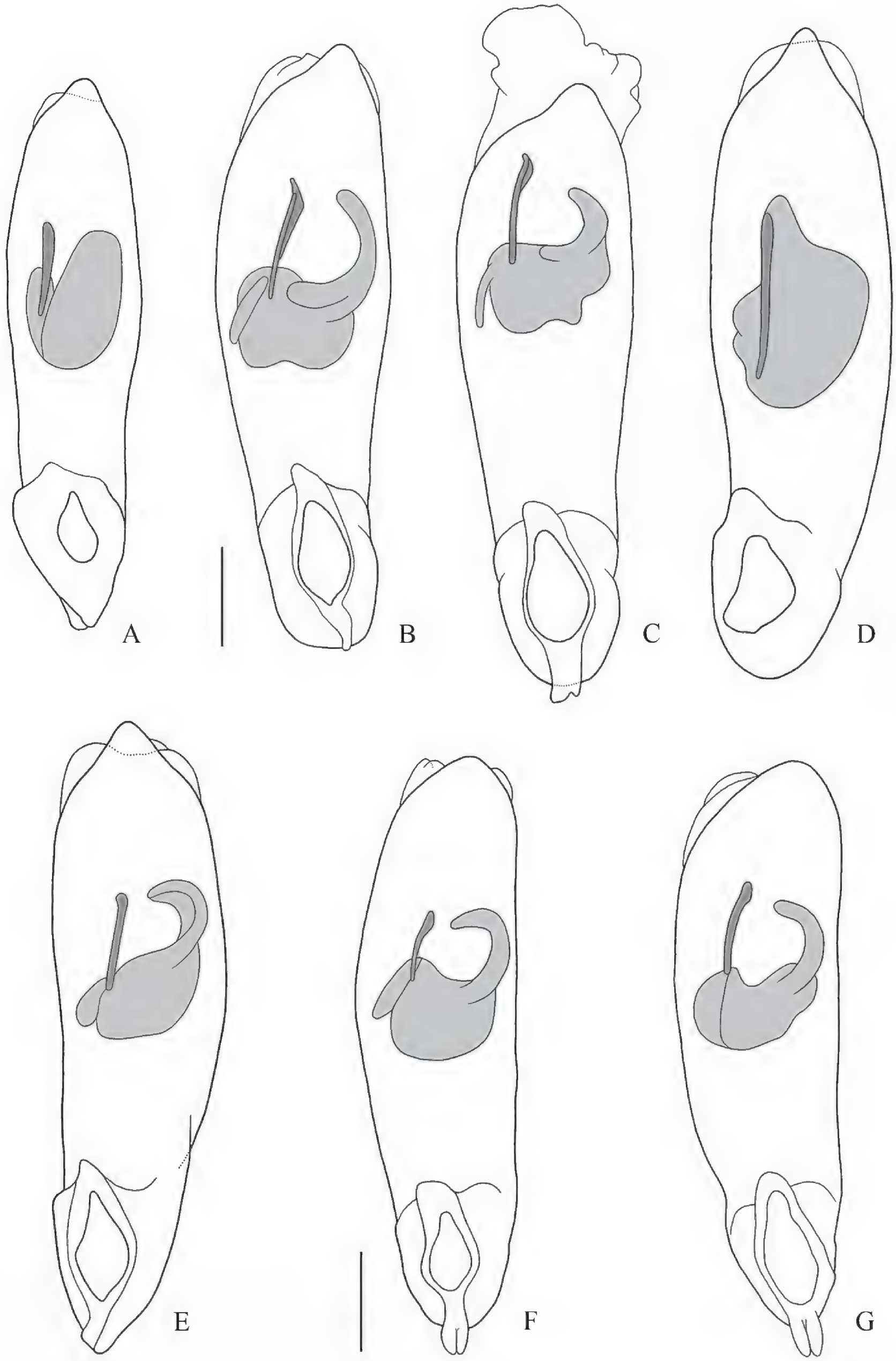

Figure 11. Median lobe of aedeagus, ventral view. **A.** *Platyderus* (*Eremoderus*) *afghanistanicus*, sp. nov., holotype; **B.** *P.* (*E.*) *brunneus brunneus* Karsch, 1881, male specimen, 50 km W of Ben Gardane, Medenine Governorate, Tunisia; **C.** *P.* (*E.*) *brunneus ferrantei* Reitter, 1909, male specimen, Holot Haluza, Southern District, Israel; **D.** *P.* (*E.*) *insignitus insignitus* Bedel, 1902, male specimen, SW Tiznit, Sous-Massa Region, Morocco; **E.** *P.* (*E.*) *jordanensis*, sp. nov., holotype; **F.** *P.* (*E.*) *languidus* (Reiche & Saulcy, 1855), lectotype; **G.** *P.* (*E.*) *languidus* (Reiche & Saulcy, 1855), male specimen, Nahal Prat, Judea and Samaria Area, Israel. Scale bars: 0.2 mm.

of same structure as in *P. ledouxi*, but dorsal sclerite in ventral view with left-sided protuberances somewhat larger. Right paramere shorter and more crooked than that of *P. ledouxi* (Fig. 12H). ***Female genitalia*** (Fig. 14C). Apical gonocoxite with pointed apex and two dorsolateral ensiform setae. Bursa copulatrix smaller than that of *P. ledouxi*. Spermathecal canal connected in medial third of receptaculum.

Habitat. All specimens hitherto known were found in open places at high altitudes between 3300 m and 3600 m. The two specimens collected by JM in June 2017 were caught from under stones in rather steep green mountain meadows (without bushes or trees). At the time of its collection the place was not dry, probably due to the thaw just a few weeks before and to some water streamed down.

Distribution. North Iran, Central Alborz Range (Fig. 17). The species occurs in the area where three Iranian provinces, Mazandaran, Alborz and Tehran, are touching each other.

Notes. Three metric measurements made by Morvan (1974: 147), i.e. width (1.15 mm), length (1.13 mm) of pronotum and length of elytra (2.1 mm), are certainly wrong. If these are correct, then we should have a total length of the pronotum and elytra 3.23 mm, but then the length of head should be at least 4 mm as far as the holotype of *P. taghizadehi* has length of body 7.5 mm (ibid.: 147).

Being a male specimen, the holotype of *P. taghizadehi* (or topotypic males) must be studied for two reasons. Firstly, this investigation can support the current taxonomic affinity with *P. ledouxi* because the distance in a straight line between the population of *P. ledouxi* southwest of Rudarbak and the type locality of *P. taghizadehi* is only about 50 kilometers and it is unclear whether the Chalus River acts as a biogeographical barrier. Furthermore, it is necessary to confirm the conspecificity of the populations from Sutak Kuh Peak and Tochal Peak (here last referred to as *P. taghizadehi*), so that the two local forms of *P. taghizadehi* can be distinguished from *P. klapperichi* sp. nov. (from Damavand County).

"*afghanistanicus*" species group

12. *Platyderus* (*Eremoderus*) *afghanistanicus*, sp. nov.

http://zoobank.org/6600933A-0719-49DA-B7EE-B268433A3815

Figs 3A, 5G, 7H, 9B, 11A, 12I, 17, Table 2

Type locality. "Afghanistan, Habatah, 1.300 m".

Notes on type locality. The precise location remains unestablished as far as several possibilities for the name "Habatah" exist: Haybatay Ghar; Haībaṯaī Ghunḏêy [= Haibatai Ghundey]; and Haybati. Given the altitude of 1300 m a.s. l. pointed on the label, a quite possible location may be the upper course of Gomal River, Afghan Province of Paktika (see Fig. 17).

Type material. ***Holotype*** ♂, 'Afghanistan' [w, p] // Habatah / 1.300m 17.6.1964 / leg. Kullman [w, h] // genus / ? / det. Ing. Jedlička [w, h&p] // Collectio / Moravské museum, / Brno [w, p]' (MMBC).

TME: 1 specimen. TGE: 1♂.

Diagnosis. This species is distinguished from all other members of the subgenus by: (1) yellow-brown color of body; (2) ventral surface largely impunctate; (3) pronotum with posterior angles not projecting laterally and basal bead complete; (4) metepisternum as long as wide; and (5) ventral sclerite of median lobe in lateral view not appreciably broadened distally (Fig. 9B).

Description. ***Habitus.*** Specimens of small size for *Platyderus* (BL: 6.80 mm; BW: 2.25 mm), with oblong, moderately convex body (Fig. 3A). Measurements and ratios. See Table 2. ***Color and lustre.*** Body dorsally and ventrally, including appendages yellow-brown. Head, pronotum and ventral surface moderately shiny, elytra less shiny than dorsal surface of head and pronotum. ***Microsculpture and punctation.*** Pronotum with isodiametric sculpticells on posterolateral parts and slightly transverse ones on anterior third, with disc having scarcely visible microsculpture. Ventral surface with scarcely-visible regular isodiametric (proepisternum, ventrites laterally) or slightly transverse sculpticells (metacoxae, ventrites medially), or microsculpture not apparent (remaining part). Pronotum almost impunctate, with a few large punctures near posterior angles and several longitudinal wrinkles on anterior transverse impression. Ventral surface, including mesepisternum, metepisternum and abdominal ventrites impunctate; prosternum medially, proepisternum and metasternum laterally with shallow punctures; abdominal ventrites 1–2 wrinkled submedially. ***Head.*** More than one-third narrower than pronotum wide (PW/HW= 1.40). Antennae long, with last three antennomeres exceeding base of pronotum. Eyes slightly convex. Labrum subrectangular, with anterior margin straight. Frontal furrows short, shallow. Paraorbital sulci shallow, narrow, ending before level of posterior supraorbital pore. ***Thorax.*** Pronotum about a quarter wider than long (PW/PL= 1.24), widest at second quarter. Anterior transverse impressions distinct, posterior one well-impressed laterally reaching basal foveae. Sides not sinuate, convex anteriorly, nearly straight posteriorly; anterior bead present laterally, absent in medial 1/10; lateral and basal beads present throughout. Metepisternum nearly as long as wide, MA/MI= 0.95–0.97. ***Elytra.*** Elongate, about one and two thirds as long as elytra width (EL/EW= 1.63), two and three quarters as long as pronotum (EL/PL= 2.78), and one third as wide as pronotum (EW/PW= 1.36), with widest point at medial third. Striae moderately punctate and impressed; parascutellar striole nearly connected with stria 1; base of stria 1 very short, joining stria 2 and reaching parascutellar pore; striole and basal portion of stria 1 slightly impressed, remaining part of stria 1 and other striae well-impressed. Interval 3 with three discal setiferous punctures each side. Umbilicate setiferous punctures 16 each side. ***Legs.*** Posterior side of profemur with one seta in basal third and one in medial third. Anterior side of right mesofemur ventrally with five

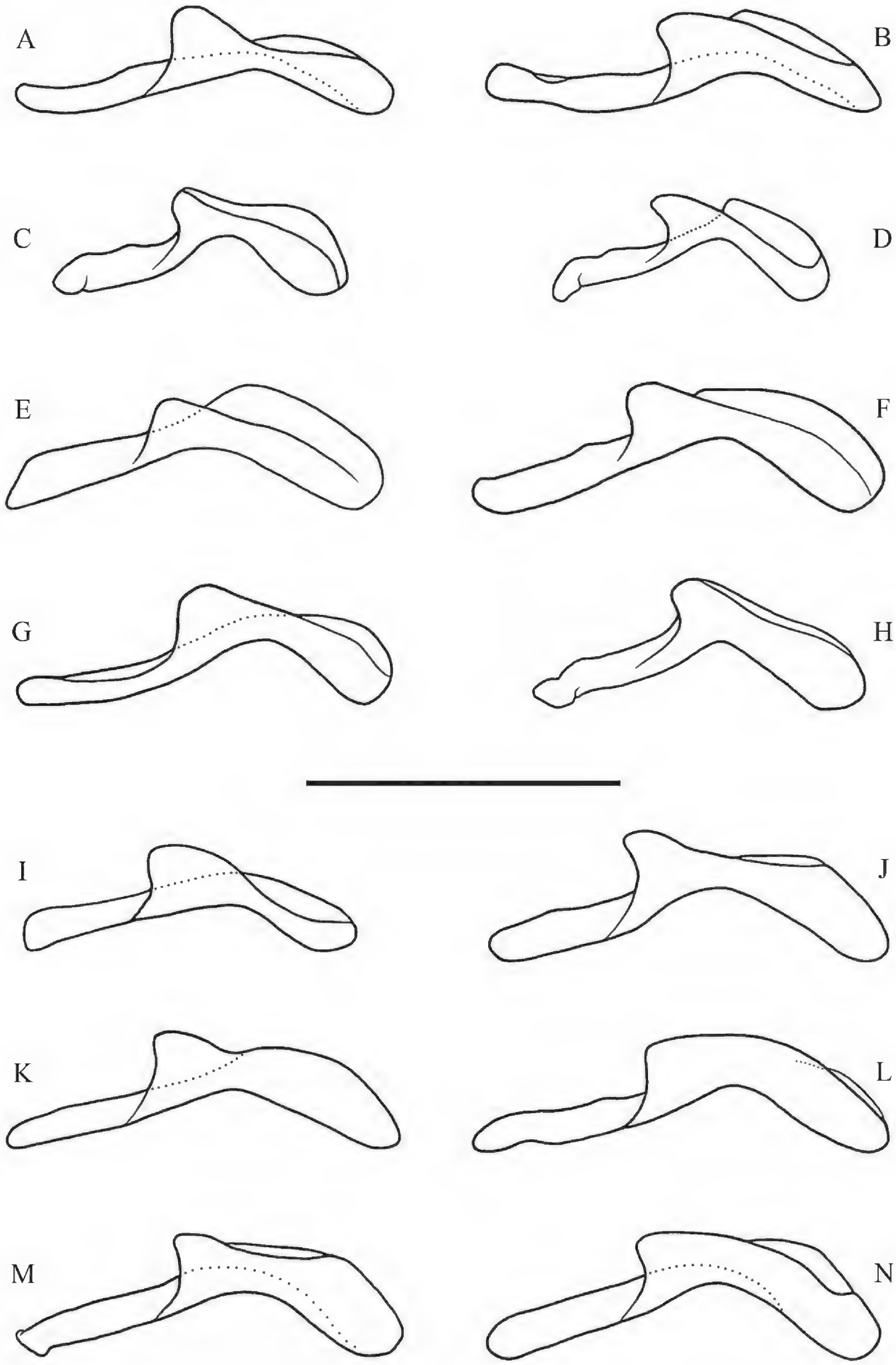

Figure 12. Right paramere, external face. **A.** *Platyderus* (*Eremoderus*) *chatzakiae*, sp. nov., holotype; **B.** *P.* (*E.*) *weiratheri* Mařan, 1940, lectotype; **C.** *P.* (*E.*) *felixi*, sp. nov., holotype; **D.** *P.* (*E.*) *iranicus*, sp. nov., holotype; **E.** *P.* (*E.*) *vrabeci*, sp. nov., holotype; **F.** *P.* (*E.*) *lassallei*, sp. nov., holotype; **G.** *P.* (*E.*) *ledouxi* Morvan, 1974, male specimen, 10 km S Hasan Keif, Mazandaran Province, Iran; **H.** *P.* (*E.*) *taghizadehi* Morvan, 1974, male specimen, Tochal, Tehran Province, Iran; **I.** *P.* (*E.*) *afghanistanicus*, sp. nov., holotype; **J.** *P.* (*E.*) *brunneus brunneus* Karsch, 1881, male specimen, 50 km W of Ben Gardane, Medenine Governorate, Tunisia; **K.** *P.* (*E.*) *brunneus ferrantei* Reitter, 1909, male specimen, Holot Haluza, Southern District, Israel; **L.** *P.* (*E.*) *jordanensis*, sp. nov., holotype; **M.** *P.* (*E.*) *languidus* (Reiche & Saulcy, 1855), lectotype; **N.** *P.* (*E.*) *languidus* (Reiche & Saulcy, 1855), male paralectotype, "Syria". Scale bars: 0.5 mm.

(Fig. 5G), left one with four setiferous punctures. Anterior side of metafemur ventrally with two long setae, one in basal third and one in medial third. ***Male genitalia.*** Urite IX small, oval, with proximal margin nearly symmetrical (Fig. 7H). Median lobe of aedeagus in lateral view slender, with narrow basal bulb, broad shaft with proximal part slightly constricted, and short, straight apex (Fig. 9B); median lobe in ventral view straight, about 4 times as long as wide; apical lamella (dorsal view) short, symmetrical, rounded at tip, with sides straight to very slightly convex. Internal sac in lateral view (Fig. 9B) with ventral sclerite broad and nearly equally wide in its length; same in ventral view (Fig. 11A), with dorsal sclerite seemingly separated from ventral sclerite, and ventral sclerite narrow, widened distally. Right paramere fine, moderately concave ventrally (Fig. 12I). ***Female genitalia.*** Unknown.

Distribution. Afghanistan (? "Habatah"); Fig. 17.

"*languidus*" species group

Diagnosis. Species are distinct from those of the other *Eremoderus* species groups by: (1) dorsal surface of body with complete or nearly complete microreticulation of isodiametric sculpticells, with transverse sculpticells lacking or highly restricted; (2) basal foveae of pronotum shallowly impressed, foveae and adjacent lateral areas impunctate or scarcely punctate; (3) basal bead of pronotum reduced to absent in basal 1/3 to 1/2; (4) elytral striae scarcely impressed, impunctate or slightly punctate, and elytral intervals rather flat; (5) mesocoxa with two to four long lateral setae, rarely one seta (polysetose state of character shared only by taxa of "*weiratheri*" group).

In addition, the species have anterior side of the mesofemur ventrally with five to seven (rarely four) setiferous punctures. In addition, all taxa save *P. brunki* sp. nov. share apical gonocoxite with one dorsomedial ensiform seta.

Notes. This group includes seven species, *P. languidus* (Reiche & Saulcy, 1855), *P. brunneus* Karsch, 1881, *P. insignitus* Bedel, 1902, *P. arabicus* sp. nov., *P. brunki* sp. nov., *P. irakensis* sp. nov. and *P. jordanensis* sp. nov. (Figs 18, 19). Most probably, the Macaronesian species *P. alticola* Wollaston, 1864 and *P. lancerottensis* Israelson, 1990 also belong to this group (see Israelson 1990: 166, fig. 4).

13. *Platyderus* (*Eremoderus*) *arabicus*, sp. nov.

http://zoobank.org/20D0899F-1E9F-41EB-8247-EBA911C8DEFE

Figs 3B, 14E, 19, Table 3

Type locality. Saudi Arabia, "Hedjaz".

Notes on type locality. Nothing is known about the exact places and circumstances of its collecting. The Hedjaz Range is a mountain range located in the Hejazi region, the western part of the country. It is very likely, as in the case of two Saudi Arabian species of *Acinopus*, *A. brittoni* Wrase & Kataev, 2016 and *A. arabicus* Wrase & Kataev, 2016 (Wrase and Kataev 2016), that *P. arabicus* lives in higher altitudes where habitats with enough moisture are present.

Type material. ***Holotype*** ♀, 'Hedjaz [w, h] // Ex-Musaeo / H.W. Bates / 1892 [w, p]' (MNHN). Paratype: 1♀, 'El Hahaz / Millinger [sic] [w, p] // El Hedjaz. / Millingen. / 1915–38.' [w, p] // Platyderus / languidus / Reiche / E.B. Britton det. / 1946 [w, h&p]' (NHMUK).

Other material examined. Imprecise locality: 1♀, 'Bagdad [w, h] // Ex-Musaeo / H.W. Bates / 1892' [w, p] (MNHN).

TME: 3 specimens. TGE: 1♀.

Etymology. The specific epithet is a Latinized adjective, based on the name of the region in which this species can be found.

Diagnosis. Among members of "*languidus*" group, *P. arabicus* sp. nov. and *P. jordanensis* sp. nov. are taxa with pronotum most constricted toward apex (PW/PA: 1.44–1.48 and 1.39–1.52, respectively; Table 3). However, pronotal forms differ. Whereas the former has a subelliptic pronotum with sides to base straight or slightly convex and less constricted, the latter has a subquadrate pronotum with sides to base slightly concave and more constricted (PW/PB: 1.09–1.15 and 1.15–1.22, respectively). In addition, *P. arabicus* has a darker, brown or chestnut color of integument and 5–6 setiferous punctures of anterior side of mesofemur ventrally, whereas *P. jordanensis* sp. nov. has a lighter, reddish-brown to rufous color and 4 setiferous punctures of anterior side of mesofemur ventrally.

It is also closely related to *P. brunki* sp. nov. but two species differ by a set of morphometric ratios (see "Diagnosis", under *P. brunki* sp. nov.).

Description. ***Habitus.*** Specimens of large size for *Platyderus* species (BL: 8.20–9.40 mm; BW: 2.85–3.25 mm), with elongate, moderately to rather convex body (Fig. 3B). ***Measurements and ratios.*** See Table 3. ***Color and lustre.*** Body and appendages uniformly dark reddish-brown, only terminal palpomeres slightly lighter. Integument slightly to moderately shiny, head and pronotum shinier than elytra. ***Microsculpture and punctation.*** Pronotum with evident microreticulation throughout, sculpticells regular isodiametric to slightly stretched. Elytra (intervals, scutellum, basal margin and lateral gutter) with distinct isodiametric sculpticells. Ventral surface with well-impressed isodiametric or slight transverse sculpticells, only epipleura, mesosternum and middle coxa with sculpticells scarcely-visible. Head impunctate, smooth or nearly smooth, with a few, very shallow wrinkles on clypeus posterior half and frontal furrows laterally. Pronotum surface mostly smooth, only basal area between foveae longitudinally wrinkled and along lateral margin with few punctures that do not reach anterior half (paratype also with several wrinkles in front of anterior transverse impression). Elytral intervals impunctate or with scattered and very shallow punctures. Abdominal ventrite 1 wrinkled medially, 2–6 smooth, neither wrinkled nor punctate. ***Head.*** More than one-third narrower than pronotum wide (PW/HW= 1.41–1.43). Eyes

Table 3. Morphometric data for species of the '*languidus*' group of *Platyderus*.

Species (number of samples)	BL/mm	BW/mm	PW/HW	PW/PL	PW/PA	PW/PB	PA/PB	EL/EW	EW/PW	EL/PL
P. arabicus sp. nov. (3♀♀)	8.20–9.40	2.85–3.25	1.41–1.43	1.07–1.11	1.44–1.48	1.09–1.15	0.76–0.79	1.54–1.62	1.44–1.49	2.47–2.56
P. arabicus sp. nov. (mean)	8.73	3.05	1.42	1.09	1.46	1.13	0.78	1.59	1.46	2.51
P. brunki sp. nov. (2 exx.)	–	3.30–3.45	–	1.02–1.05	1.38–1.42	1.14–1.22	0.80–0.88	1.58–1.59	1.48	2.40–2.44
P. brunki sp. nov. (mean)	–	3.38	–	1.04	1.40	1.18	0.84	1.59	1.48	2.42
P. brunneus brunneus Karsch (5♂♂, 4♀♀)	7.70–9.30	2.70–3.40	1.28–1.41	1.10–1.20	1.36–1.43	1.21–1.28	0.88–0.92	1.53–1.72	1.36–1.48	2.53–2.72
P. brunneus brunneus Karsch (mean)	8.60	2.99	1.35	1.16	1.39	1.25	0.90	1.61	1.41	2.63
P. brunneus ferrantei Reitter (1♂, 6♀♀)	7.60–9.00	2.70–3.20	1.29–1.39	1.14–1.21	1.34–1.42	1.12–1.23	0.82–0.89	1.52–1.60	1.35–1.46	2.46–2.58
P. brunneus ferrantei Reitter (mean)	8.53	3.01	1.32	1.16	1.38	1.17	0.85	1.56	1.41	2.53
P. insignitus insignitus Bedel (1♂, 4 ♀♀)	6.60–8.70	2.20–3.00	1.35–1.45	1.06–1.17	1.35–1.40	1.12–1.17	0.80–0.85	1.57–1.65	1.40–1.51	2.41–2.61
P. insignitus insignitus Bedel (mean)	7.72	2.67	1.38	1.10	1.39	1.15	0.83	1.61	1.45	2.55
P. irakensis sp. nov. (2♀♀)	8.30–9.00	2.90–3.20	1.30–1.32	1.13	1.34–1.38	1.09–1.11	0.79–0.83	1.62–1.63	1.45–1.47	2.65–2.72
P. irakensis sp. nov. (mean)	8.65	3.05	1.31	1.13	1.36	1.10	0.81	1.63	1.46	2.69
P. languidus (Reiche & Saulcy) (10♂♂, 10♀♀)	6.40–9.10	2.20–3.15	1.27–1.38	1.11–1.22	1.31–1.41	1.10–1.20	0.81–0.90	1.52–1.62	1.29–1.48	2.42–2.60
P. languidus (Reiche & Saulcy) (mean)	7.82	2.74	1.33	1.16	1.35	1.16	0.85	1.56	1.37	2.49
P. jordanensis sp. nov. (4♂♂, 1♀)	8.70–9.90	3.00–3.45	1.35–1.42	1.08–1.13	1.39–1.52	1.15–1.22	0.78–0.87	1.56–1.60	1.39–1.46	2.41–2.60
P. jordanensis sp. nov. (mean)	9.28	3.25	1.39	1.10	1.44	1.18	0.82	1.59	1.43	2.50

For abbreviations in line 1, see "Abbreviations to measurements and ratios" (section "Material and methods").

moderately convex. Labrum subrectangular, slightly shorter than clypeus, with anterior margin concave. Frontoclypeal suture slightly distinct in middle, indistinct at sides. Frontal furrows very shallow, subfoveolate. Paraorbital sulci straight, backward barely reaching posterior margin of eye, not reaching level of posterior supraorbital pore. ***Thorax.*** Pronotum about one time and one tenth as wide as long (PW/PL= 1.07–1.11), with widest point at medial third. Anterior transverse impression indistinct to slightly distinct, posterior transverse impression barely distinct. Sides not sinuate, smoothly convex medially and anteriorly, nearly straight posteriorly; anterior bead present laterally, lack in medial 1/8–1/10; basal bead present laterally, reduced to varying degrees or non-existent in medial half. Metepisternum as long as wide, MA/MI= 1.00. ***Elytra.*** Elongate, about one –and-a-half times as long as elytra wide (EL/EW= 1.54–1.62), two and a half times as long as pronotum (EL/PL= 2.47–2.56), and one and a half as wide as pronotum (EW/PW= 1.44–1.49), with widest point at beginning of third quarter. Parascutellar striole punctiform to sublinear, very shallow; striae 1–6 more impressed than striole and striae 7 and 8, moderately to indistinctly punctate; parascutellar striole short, not joining stria 1; base of stria 1 ending in parascutellar pore, striae 2–5 reaching basal bead, 6 and 7 ending little before. Interval 3 with three discal setiferous punctures on right elytron (medial one of left elytron lacking in two specimens). Umbilicate setiferous series with 15 punctures on left elytron and 16 on right elytron in holotype, with 16 punctures on each side in paratype. ***Legs.*** Posterior side of profemur with one seta in basal third and one in medial third. Mesofemur with 4 setiferous punctures on anterior side ventrally. Anterior side of metafemur ventrally with two to three long setae, one in basal third and one to two in apical half. ***Male genitalia.*** Unknown. ***Female genitalia*** (Fig. 14E). Apical gonocoxite with pointed apex and one dorsolateral ensiform seta. Spermathecal canal connected in basal third of receptaculum.

Comparisons. From *P. irakensis* sp. nov., that inhabits areas northeast of the Al-Hedjaz region, *P. arabicus* differs in: (1) dark brown color of body (vs. orange-brown color of body); (2) head narrower, compared to pronotum (PW/HW: 1.41–1.43, vs. PW/HW: 1.30–1.32); (3) pronotum with anterior angles more pointed and sides to apex more constricted (PW/PA: 1.44–1.48), vs. pronotum with anterior angles less pointed and sides to apex less constricted (PW/PA: 1.34–1.38); (4) elytra less long, compared to pronotum (EL/PL: 2.47–2.56, vs. EL/PL: 2.65–2.72); (5) meso- and metatarsomeres dorsally neither flattened nor grooved (vs. meso- and metatarsomeres dorsally partly flattened and slightly grooved).

Habitat. Like other representatives of the "*languidus*" group with known habitat preferences (*P. languidus*, *P. brunneus*, *P. brunki* sp. nov.), *P. arabicus* sp. nov. could inhabit the wetter parts of desert and semi-desert habitats.

Distribution. The new species is known from the region of Hedjaz in Saudi Arabia, which includes the western part of the country (Fig. 19). Likely to be endemic to the Hedjaz Mountains. As far as the specimen with the locality "Bagdat" is concerned, we believe that this inscription is either due to a mislabeling or a genuine observation. If it is the latter case, then the species probably occurs in the Iraqi areas on the border with Saudi Arabia, southwest of the city of Baghdad.

Notes. The specimen from "Bagdad" differs from the two type specimens in the larger, more quadratic and slightly wider pronotum (vs. smaller and somewhat narrow pronotum) and having less prominent anterior angles (vs. somewhat more prominent anterior angles). That is why, we have some doubt if this specimen really belongs to *P. arabicus*.

14. *Platyderus* (*Eremoderus*) *brunki* sp. nov.

http://zoobank.org/C5B5E518-02FF-4E24-A1C1-70F560699170

Figs 3C, 14F, 19, Table 3

Type locality. Yemen, 'Amran Governorate, Thula District, between Kaukaban and Shibam, approximate GPS coordinates: 15.503, 43.901.

Type material. ***Holotype*** ♀, 'YEMEN, ~ 40 km NW Sanaa, / Kaukaban/Shibam, small waste- / waterstream, ruralic vegetation, / sand, 2700–2930 m Handaufsam. / 15°30'9.98"N, 43°54'2.66"E / 02. Dez. 2009, legit. Ingo Brunk [p, w] // Coll. / I. Brunk / Dresden/Germ [h, pn]' (cBRU).

Other material examined. Remains of a specimen of uncertain sex in bad condition (only pronotum and elytra preserved), 'UNDER A STONE // YEMEN / El Errein, nr. Haz, / about 16 miles N.W. / of San'a, ca. 9,300ft. [= 2835 m] / 3.ii.1938.// B.M. Exp. to / S.W. Arabia. / H. Scott & / E.B. Britton. / B.M. 1938–246, // Platyderus / languidus / Reiche / E.B. Britton det. / 1946' (NHMUK).

TME: 2 specimens. TGE: 1♀.

Etymology. Latinized patronym based on the surname of Ingo Brunk (Dresden, Germany), who collected the first well-preserved representative of the new species.

Diagnosis. *Platyderus brunki* sp. nov. readily differs from all other *Eremoderus*-taxa in its smallest value in ratio PW/PL (Table 3). It is most closely related to *P. arabicus*; both species are the only two within "*languidus*" group with darkest coloration of integument and sides of pronotum not sinuate from widest point to base (*P. irakensis* has also sides of pronotum not sinuate to base, but much lighter coloration of integument and higher value in ratio EL/PL). The new species is distinct from *P. arabicus* sp. nov., in: (1) pronotum with anterior angles more rounded at tips (vs. pronotum with anterior angles more pointed at tips, Fig. 3B, C); (2) pronotum nearly as long as wide, PW/PL: 1.02–1.05 (vs. pronotum appreciably wider than long, PW/PL: 1.07–1.11); (3) pronotum subcordate, less constricted anteriorly, PW/PA: 1.38–1.42, with greater value in ratio PA/PB: 0.80–0.88 (vs. pronotum subquadrate, more constricted anteriorly, PW/PA: 1.44–1.48, with smaller value in ratio PA/PB: 0.76–0.79); (4) elytra compared to pronotum slightly shorter, EL/PL: 2.40–2.44 (vs. elytra compared to pronotum slightly longer, EL/PL: 2.47–2.56). Females are different from all other representatives of the "*languidus*" group by the presence of two, instead of one, dorsolateral ensiform setae on the apical gonocoxite (Fig. 14F).

Description. ***Habitus.*** Specimens of large size for *Platyderus* species (BL of holotype: 9.50 mm; BW: 3.30 mm), with elongate, moderately convex body (Fig. 3C). ***Measurements and ratios.*** See Table 3. ***Color and lustre.*** Body and appendages uniformly reddish-brown, with palpi and antennae slightly lighter. Integument slightly to moderately shiny, head and pronotum shinier than elytra. ***Microsculpture and punctation.*** Microreticulation of pronotum and elytra as in *P. arabicus* sp. nov. Ventral surface largely with well-impressed isodiametric or slight transverse sculpticells, epipleura, mesosternum and middle coxa with sculpticells less apparent. Head (holotype) nearly smooth, impunctate, wrinkles present only on clypeus and frons, including frontal foveae and area surrounding them. Pronotum surface largely smooth, only apical part medially in front of anterior transverse impression and basal area medially behind posterior transverse impression longitudinally wrinkled, as well as each side along lateral margin with a few shallow punctures not reaching anterior half. Elytral intervals without apparent punctation. Abdominal ventrites nearly smooth, impunctate, 3–5 with a few fine wrinkles at sides. ***Head*** (holotype). About two-thirds as wide as pronotum (PW/HW of holotype: 1.36). Eyes long, slightly convex. Labrum subrectangular, as long as clypeus, with anterior margin concave. Frontoclypeal suture distinct in middle, indistinct at sides. Frontal furrows shallow, subfoveolate. Paraorbital sulci straight, backward barely reaching posterior margin of eye, not reaching level of posterior supraorbital pore. ***Thorax.*** Pronotum almost as wide as long (PW/PL= 1.02–1.05), with widest point at second quarter (holotype) or medial fifth (specimen from "El Errein, nr. Haz"). Anterior and posterior transverse impressions slightly distinct medially, indistinct laterally. Sides not sinuate, smoothly convex anteriorly and medially, straight (specimen from "El Errein, nr. Haz") or convex posteriorly (holotype); anterior bead present laterally, lacking in medial 1/8 to 1/10; basal bead present laterally, reduced to absent in medial half; posterior angles rounded (holotype) or obtuse (specimen from "El Errein, nr. Haz"). Metepisternum as long as wide, MA/MI= 1.00. ***Elytra.*** Elongate, about one and a half times as long as elytra (EL/EW= 1.58–1.59), two and a half times as long as pronotum (EL/PL= 2.40–2.44), and a one and half as wide as pronotum (EW/PW= 1.48), with widest point at medial third. Parascutellar striole scarcely distinct, very shallow; striae more impressed than striole, barely punctate; parascutellar striole not joining stria 1; striae 1–5 and sometimes 6 reaching basal bead, 7 ending little before. Interval 3 with three discal setiferous punctures, medial one larger than others, in midst of interval 3 (holotype) or near stria 2 (specimen from "El Errein, nr. Haz"), anterior and posterior punctures smaller, adjoining stria 3 (posterior puncture lacking on right elytron of holotype). Umbilicate setiferous series with 16 or 17 punctures of each elytron. ***Legs.*** Posterior side of profemur with one seta in basal third and one in medial third. Left mesofemur with 5, right one with 4 setiferous punctures on anterior side ventrally. Anterior side of metafemur ventrally with two long setae, one in basal third and one in medial third. ***Male genitalia.*** Unknown. ***Female genitalia*** (Fig. 14F). Apical gonocoxite with pointed apex and two dorsolateral ensiform setae. Spermathecal canal connected in medial third of receptaculum.

Habitat. The holotype was collected by sifting the waste-water vegetation and soil at a humid place where waste water falls down (Ingo Brunk, pers. comm.). The correct altitude of the type locality is ca. 2700 m a. s. l. The locality is situated approximately half-way on a very steep walking path starting from Kawkaban (town on the top of the Mount Kawkaban) downwards to Schibam Kawkaban (town on the bottom of the mountain). Together with the holotype, numerous specimens of *Trechus* (*Arabotrechus*) *rougemontiellus* Belousov, 2017 and few *Bembidion* spp. were collected.

Distribution. Yemen (Sana'a Governorate), see Fig. 19.

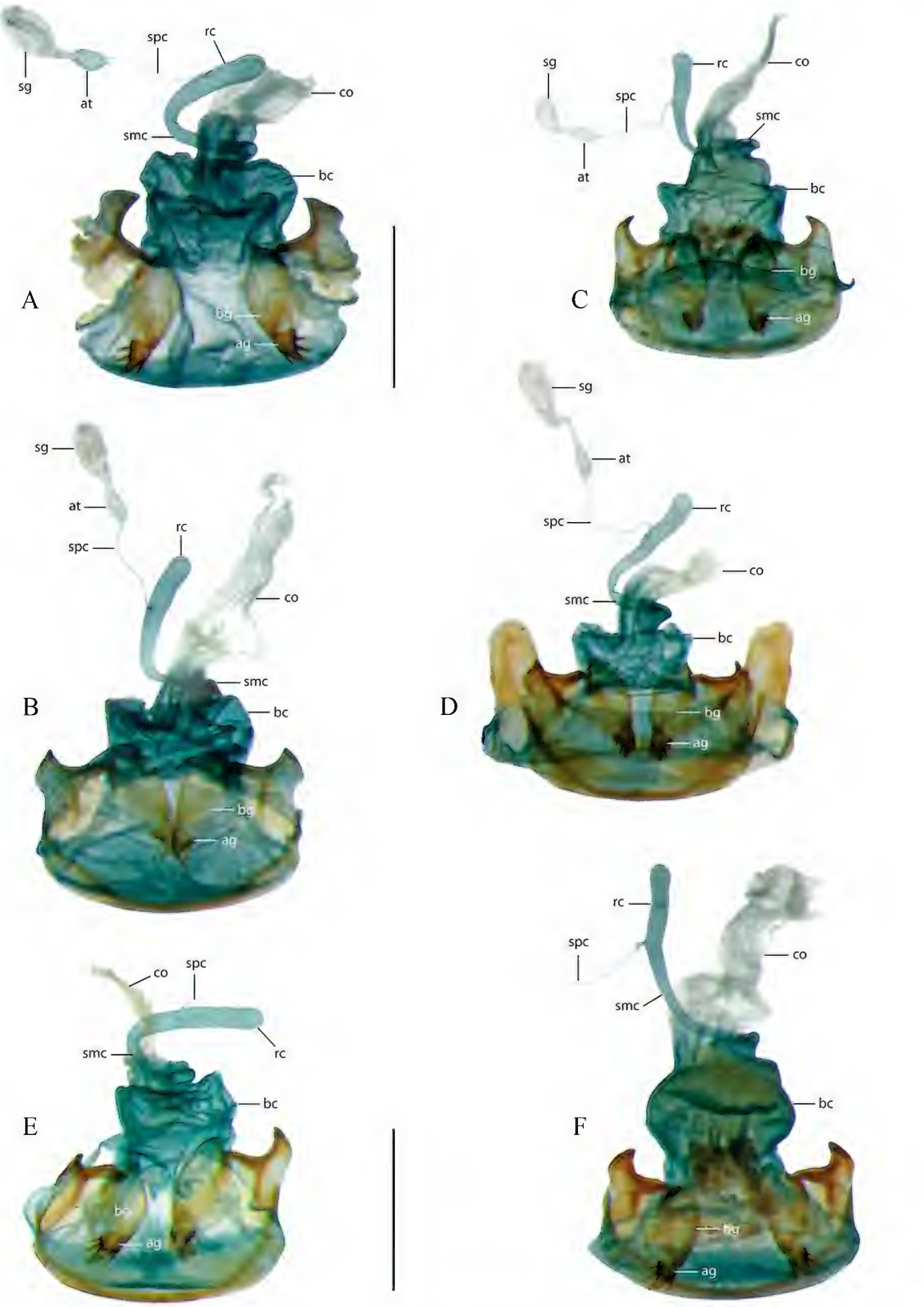

Figure 13. Spermathecal complex and gonocoxites, ventral view. **A.** *Platyderus* (*Eremoderus*) *weiratheri* Mařan, 1940, topotype female specimen; **B.** *P.* (*E.*) *felixi*, sp. nov., topotype female paratype; **C.** *P.* (*E.*) *iranicus*, sp. nov., topotype female paratype; **D.** *P.* (*E.*) *vanensis*, sp. nov., topotype female paratype; **E.** *P.* (*E.*) *vanensis*, sp. nov., female paratype, col de Buglan 1500 m, border area of Bingöl and Muş provinces, Turkey; **F.** *P.* (*E.*) *vrabeci*, sp. nov., topotype female paratype. Scale bars: 0.5 mm. Abbreviations: **ag** – apical gonocoxite; **at** – atrium; **bc** – bursa copulatrix; **bg** – basal gonocoxite; **co** – common oviduct; **rc** – receptaculum; **sg** – spermathecal gland; **smc** – seminal canal; **spc** – spermathecal canal.

15. *Platyderus* (*Eremoderus*) *brunneus* Karsch, 1881, stat. rev.

Figs 3D, F, 5H, 6A, B, 7I, J, 9C, D, 11B, C, 12J, K, 15A, B, 18, Table 3

Diagnosis. A species of *Platyderus* (*Eremoderus*), with mesotarsomeres and metatarsomeres dorsally more or less flattened and grooved (Fig. 6A, B), cordate pronotum, with sides from widest point to base markedly (nominotypical subspecies) or barely concave (ssp. *ferrantei*) and posterior angles obtuse, with tips laterally more (nominotypical subspecies) or less protruding (ssp. *ferrantei*), and median lobe of aedeagus with basal bulb more slanting to shaft (Fig. 9C, D).

Redescription. ***Habitus.*** Moderately to large-sized species (BL: 7.60–9.30 mm; BW: 2.70–3.40 mm), with elongate and moderately convex body (Fig. 3D, F). ***Measurements and ratios.*** See Table 3. ***Color and lustre.*** Body, palpi, antennae and most of legs yellow-brown to reddish- brown, with head usually darker than pronotum and elytra and femora lighter than tibiae and tarsomeres. Integument slightly shiny (less shiny than in *P. languidus*). ***Microsculpture and punctation.*** Pronotum with evident microreticulation, sculpticells regularly isodiametric. Elytral intervals, scutellum and lateral gutterwith distinct isodiametric sculpticells; basal margin with reduced microreticulation. Ventral surface with impressed slight transverse sculpticells or with sculpticells scarcely-visible. Head impunctate, usually smooth, clypeus and areas laterad of frontal furrows sometimes with fine longitudinal wrinkles. Surface of pronotum impunctate, largely smooth, only basal area medially behind posterior transverse impression longitudinally wrinkled, rarely apical part medially in front of anterior transverse impression also wrinkled; basal foveae and adjacent lateral areas smooth, smoother than those in *P. languidus*. Elytral intervals without apparent punctation. Abdominal ventrite 1 finely wrinkled in whole, 2–5 finely wrinkled at sides. ***Head.*** About one-third as wide as pronotum (PW/HW= 1.28–1.41). Eye long, moderately convex. Labrum subrectangular, as long as clypeus, with anterior margin concave medially. Frontoclypeal suture distinct in middle, reduced to disappeared at sides. Frontal furrows small, rather shallow, punctiform. Paraorbital sulci straight, fine, backward surpassing posterior margin of eye, nearly reaching level of posterior supraorbital pore. ***Thorax.*** Pronotum one-tenth to one-fifth wider than long (PW/PL= 1.10–1.21), with widest point at second quarter. Anterior transverse impression absent, posterior transverse impression short, barely distinct. Sides convex medially and anteriorly, slightly concave to straight in base; anterior bead present laterally, lacking or present in medial eight to tenth; basal bead present laterally, reduced to absent in medial fifth to half. Metepisternum slightly longer than wide or nearly as long as wide, MA/MI= 0.87–1.00, with greater values occurring in specimens of ssp. *ferrantei*. ***Elytra.*** Oblong, about one-and-a-half times to one and two thirds as long as wide (EL/EW= 1.52–1.72), two-and-a-half times or little more as long as pronotum (EL/PL= 2.46–2.72), and one and a third to a one-and-a-half times as wide as pronotum (EW/PW= 1.35–1.48), with widest point at medial third. Parascutellar striole and striae 1–7 very shallow to indistinct, stria 8 evident, clearly deeper than other striae (nominotypical form) or parascutellar striole and striae 1–7 distinct, slightly impressed, stria 8 somewhat deeper than other striae (ssp. *ferrantei*); parascutellar striole, if present, not joining stria 1; striae 1–8 superficially to moderately punctate; bases of striae 1–7 more or less reduced, not reaching basal bead (nominotypical form) or distinct, reaching basal bead (ssp. *ferrantei*). Interval 3 with three discal setiferous punctures. Umbilicate setiferous series with 16 or 17 punctures on each side. ***Legs.*** Posterior side of profemur with one or two setae in basal third and one or two in medial third. Mesofemur with 4–7 setiferous punctures on anterior side ventrally (Fig. 5H). Anterior side of metafemur ventrally with a few long setae, one in basal third and one to three in apical half. ***Male genitalia.*** Urite IX suboval, with proximal margin slightly asymmetrical, insignificantly turned to left (Fig. 7I, J). Median lobe of aedeagus in lateral view slender, with narrow basal bulb, long shaft and short, straight apex (Fig. 9C, D); median lobe in ventral view straight, 3.4–3.5 times longer than wide (Fig. 11B, C); apical lamella (dorsal view) short, scarcely asymmetrical, rounded at tip, with right side straight and left side slightly concave. Internal sac in lateral view (Fig. 9C, D) with ventral sclerite long, broadened and rounded distally; same in ventral view (Fig. 11B, C), with dorsal sclerite large, reticulate, with left-sided and right-sided protuberances distinct, and ventral sclerite narrow and distally very slightly curved to left. Right paramere as on Fig. 12J, K. ***Female genitalia*** (Fig. 15A, B). Apical gonocoxite with rounded apex and one dorsolateral ensiform seta. Spermathecal canal connected in basal third of receptaculum.

Notes. Due to minor morphological differences, the populations from the lower course of Nile River and Southwest Israel are treated as a distinct subspecies of *P. brunneus* (see Fig. 18). Moreover, no verifiable records of the species are so far known from the vast area between Misrata District (Libya) and Cairo Governorate (Egypt).

15.1. *Platyderus* (*Eremoderus*) *brunneus brunneus* Karsch, 1881

Figs 3D, E, 6A, 7I, 9C, 11B, 12J, 15A, 18, Table 3

Platyderus brunneus Karsch, 1881: 43 (type locality: "Bir Milrha", Jabal Tarhūnah [Tarhuna plateau], Libya, based on lectotype designation), stat. rev.

= *Platyderus elegans* Bedel, 1900: 170 (type locality: "Sud de la Tunisie"), syn. n.

Notes on type locality. This taxon was described from "Bir Milrha" (Murqub District, Libya; locality cannot be localized) and "Uadi Mbellem" (Misrata District, Libya; locality with approximate GPS coordinates: 31.167,

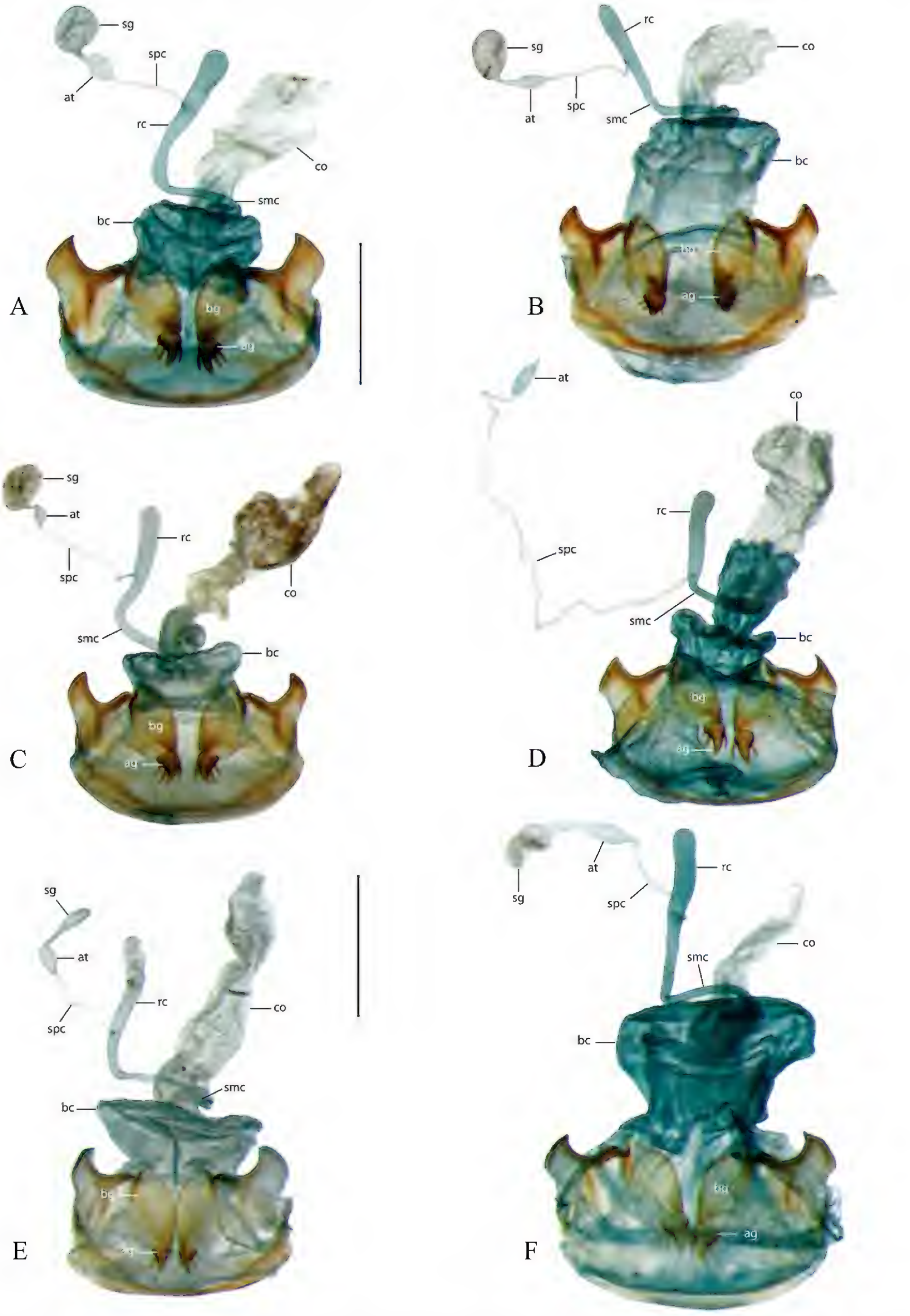

Figure 14. Spermathecal complex and gonocoxites, ventral view. **A.** *Platyderus* (*Eremoderus*) *lassallei*, sp. nov., female paratype, Iran, Mazandaran Province, E Qolqol; **B.** *P.* (*E.*) *ledouxi* Morvan, 1974, female specimen, 10 km SW Rudbarak, Mazandaran Province, Iran; **C.** *P.* (*E.*) *taghizadehi* Morvan, 1974, female specimen, Alburz Dizin, Tehran Province, Iran; **D.** *P.* (*Platyderus*) *umbratus* (Ménétriés), female specimen, Iran, Kohgiluyeh va Boyer-Ahmad Province, Sisakht; **E.** *P.* (*E.*) *arabicus*, sp. nov., holotype; **F.** *P.* (*E.*) *brunki*, sp. nov., holotype. Scale bars: 0.5 mm. For abbreviations see captions on Fig. 13.

15.050) both localities in the Gebèl Tarhúna Plateaux. As a result of current lectotype designation, the former place becomes the type locality of *P. brunneus brunneus*. *Platyderus elegans* was first discovered from "Sud de la Tunisie" (Bedel, 1900), and for the second time – from "Aïn Segoufta à l'O. du Dj. Bon-Hedma" (Bedel, 1902); the second location refers to present Jebel Bou-Hedma National Park, situated on Gafsa Governorate and Sidi Bouzid Governorate, Tunisia.

References. *Platyderus elegans*: Bedel 1902: 211, 214–215; Csiki 1931: 768; Lorenz 1998: 375; Hovorka and Sciaky 2003: 522; Lorenz 2005: 395; Hovorka 2017: 757. *Platyderus languidus* (data for *brunneus* Karsch): Bedel 1902: 211, 214–215; Csiki 1931: 769; Hovorka and Sciaky 2003: 521; Lorenz 2005: 396; Hovorka 2017: 756.

Type material. *Platyderus brunneus* Karsch, 1881. The original type series of Karsch consisted of six syntypes, 4♂♂, 2♀♀, all stored in MFNB. Their examination revealed the presence of two diagnosable taxa. One male and one female specimen were found to represent the subspecies *ferrantei* (see section "Type material" under *P. brunneus ferrantei*). The other four specimens belong to *P. brunneus brunneus*, the first of them designated lectotype and other three paralectotypes: ♂, '60906 [p, w] // Bir Milrha / Exp. Rohlfs. [h, tq] // Hist.-Coll. (Coleoptera) / Nr. 60906 / Platyderus brunneus Klug, / Karsch* / Bir Milrha / Zool. Mus. Berlin [p, w] // SYNTYPE / Platyderus / brunneus Karsch, 1881 / labelled by MFNB 2017 [p, r]'; ♂, 'Uadi M'bellem / Exp. Rohlfs. [h, tq] // Hist.-Coll. (Coleoptera) / Nr. 60906 / Platyderus brunneus Klug, / Karsch* / Uadi M'bellem, Exped. / Rohlfs / Zool. Mus. Berlin [p, w] // SYNTYPE / Platyderus / brunneus Karsch, 1881 / labelled by MFNB 2017 [p, r]'; ♂, 'gn 2469. [h, w] // Hist.-Coll. (Coleoptera) / Nr. 60906 / Platyderus brunneus Klug, / Karsch* / Bir Milrha & Uadi M'bellem, / Exped. Rohlfs / Zool. Mus. Berlin [p, w] // SYNTYPE / Platyderus / brunneus Karsch, 1881 / labelled by MFNB 2017 [p, r]'; ♀, 'Hist.-Coll. (Coleoptera) / Nr. 60906 / Platyderus brunneus Klug, / Karsch* / Bir Milrha & Uadi M'bellem, / Exped. Rohlfs / Zool. Mus. Berlin [p, w] // SYNTYPE / Platyderus / brunneus Karsch, 1881 / labelled by MFNB 2017 [p, r]'.

The synonymy of *Platyderus brunneus* with *P. languidus* was proposed by Bedel (1902: 211). Revision of the type material and study of the original descriptions of the both aforementioned forms and that of *P. elegans*, as well the study of other *Eremoderus*-specimens from North Africa and the Levant, revealed that *P. brunneus* and *P. elegans* represent a single species in contrast with *P. languidus* which is a separate species not occurring in North Africa.

Other material examined. Tunisia: Medenine Governorate: 1♂, 1♀, 'TUNISIA c. or. / 50 km W of Ben Gardane / 22.4.1998 / R. Borovec lgt. // Platyderus / elegans Bedel / JEANNE det. 2003 // COLL. WRASE / BERLIN' (cWR).

Libya: Nuqat al Khams District: 1♀, 'BUKAMASH [near Zuwarah City] / 04–II–2006 / LIBYA P.Weill' (cWEI). Jafara District: 1♀, 'AZIZIYAH P.Weill / 30–I–2010 LIBYE // Platyderus / languidus. R & S / Det. P. Weill 2010' (cWEI). Tripoli District: 1♂, '02–III–2002 / JANZUR / LIBYA – TRIPOLITANIA // JC Ringenbach Leg. / *Platyderus languidus*' (cWEI).

Three additional records from Libya that concern *P. brunneus brunneus* are pointed out for *P. languidus* in the webpage http://jcringenbach.free.fr/website/beetles/carabidae/Platyderus_languidus.htm, namely: 'East of Tajura', 04/01/2002, JCR Leg.'; 'Road Yafran-Az Zintan, 25/12/2001, JCR Leg.'; 'Sidi As Sa'ih 03/02/2006, PW Leg.'. The webpage is part of the database http://jcringenbach.free.fr/website/beetles/carabidae/carablibya.htm created by Jean-Claude Ringenbach (Pardies-Piétat, France) and Patrick Weill (Pau, France) and representing online checklist of Libyan ground-beetles.

TME: 9 specimens. TGE: 2♂♂, 1♀.

Diagnosis. Nominotypical subspecies differs from ssp. *ferrantei* in parascutellar striole and elytral striae 1–7 very shallow, almost indistinct, with bases not reaching basal bead (vs. parascutellar striole and elytral striae 1–7 distinct, slightly impressed, with bases reaching basal bead). In addition, the former has the pronotal anterior margin proportionally broader, compared to the posterior margin (vs. anterior margin of pronotum proportionally narrower, compared to posterior margin, see PA/PB, Table 3).

Habitat. Two of the three Libyan specimens were collected under stones or plant debris. Bukamash and Aziziyah are two biotopes of Tripolitania located in a semi-desert zone (Jaffarah Plain), with a few sparse trees and abundant ground vegetation, mainly in early spring (Patrick Weill, pers. comm.).

Distribution. Tunisia, Libya (Fig. 18).

Notes. Hovorka (2017: 757) placed *P. elegans* in *Platyderus* (s. str.). Present study proved however that the species currently validly known as *P. brunneus* is indeed a member of subgenus *Eremoderus*.

15.2. *Platyderus* (*Eremoderus*) *brunneus ferrantei* Reitter, 1909, stat. nov.

Figs 3F, 5H, 6B, 7J, 9D, 11C, 12K, 15B, 18, Table 3

Platyderus ferrantei Reitter, 1909: 29 (type locality: Egypt, "Cairo").

Notes on type locality. Nothing is known about the exact locality and circumstances of collecting. At time of collecting, the city of Cairo was entirely situated on the east bank of the Nile River. Nevertheless, it is possible for the subspecies *ferrantei* to occur on both sides of the Nile River, as moisture should favor the species' occurrence and distribution in certain less human-influenced habitats.

References. *Platyderus ferrantei*: Csiki 1931: 768; Lorenz 1998: 375; Hovorka and Sciaky 2003: 522; Lorenz 2005: 395; Abdel-Dayem 2012: 200–201; Hovorka 2017: 758.

Type material. *Platyderus ferrantei* Reitter, 1909. Holotype, female in HNHM, with the following labels: 'Aegiptus / Cairo Ferrante' [h, w] // *Ferrantei* / m. / Cairo. [h, w, written by Reitter himself] // coll. Reitter [p, w] // Holotypus 1909 / *Platyderus* / *Ferrantei* / Reitter [p, h, w/r, subsequently added]'.

The holotype designations in many type series, stored in HNHM, made by the late Zoltán Kaszab (or one of his co-workers) are invalid because in most cases these are syntypes. In this case, the labelling as holotype was correct, as it is only one specimen on which the description was based.

Type material. *Platyderus brunneus* Karsch, 1881. One female specimen and one male specimen from type series of *P. brunneus* are conspecific with the holotype of *P. ferrantei*. They are labelled as follows: 1♀, '2469 [p, w] // Hist.-Coll. (Coleoptera) / Nr. 2469 / Sphodrus brunneus / Aegypt., Ehrenberg / Zool. Mus. Berlin [p, w] // SYNTYPE / Platyderus / brunneus Karsch, 1881 / labelled by MFNB 2017 [p, r] // brunneus / m. Karsch* / Egypt Ehrbg. [h, tl]' (MFNB); 1♂, '2470 [p, w] // Syria. Ehr: / lxxiii . 196. [h, y] // Hist.-Coll. (Coleoptera) / Nr. 2470 / Sphodrus brunneus / Syria, Ehrenberg / Zool. Mus. Berlin [p, w] // SYNTYPE / Platyderus / brunneus Karsch, 1881 / labelled by MFNB 2017 [p, r]' (MFNB). The male specimen has non-chitinised genitalia and a paler coloration (see Karsch 1881: 44), indicating the immaturity of the specimen.

Other material examined. Israel: Southern District: 1♂, 1♀, 'Israel / Holot Haluza / 1.iii.2008 / Ittai Renan' (SMNH-TAU); 1♀, 'Israel / Holot Haluza / 25.IV.2009 / I. Renan' (SMNH-TAU); 2♀♀, 'Israel / Holot Haluza / 2.iii.2010 / I. Renan' (SMNH-TAU).

TME: 8 specimens. TGE: 1♂, 1♀.

Diagnosis. See "Diagnosis" under the nominotypical subspecies.

Comparisons. The subspecies considered here differs from easterly occurring representatives of the "*languidus*" group, i.e. *P. languidus*, *P. jordanensis* sp. nov. and *P. arabicus* sp. nov., by the meso- and metatarsomeres dorsally somewhat flattened and grooved. Its median lobe of aedeagus is more arcuate ventrally and with ventral margin of apex straight (this of *P. languidus* is appreciably less arcuate ventrally, whereas that of *P. jordanensis* has ventral margin of apex convex). Other differences between *P. brunneus ferrantei* and *P. jordanensis* sp. nov. are listed in section "Comparisons" under the latter taxon.

Supplementary distinctions between *P. brunneus ferrantei* and *P. arabicus* sp. nov., are: a/ head compared to pronotum wider, PW/HW: 1.29–1.39 (vs. head narrower, PW/HW: 1.41–1.43); b/ pronotum appreciably wider than long, PW/PL: 1.14–1.21, less constricted to apex, PW/PA: 1.34–1.42, with anterior margins compared to posterior margin long, PA/PB: 0.82–0.89 (vs. pronotum less wider, PW/PL: 1.07–1.11, more constricted to apex, PW/PA: 1.44–1.48, with anterior margin compared to posterior margin much narrower, PA/PB: 0.76–0.79).

P. irakensis and *P. brunneus ferrantei* share meso- and metatarsomeres dorsally flattened and slightly grooved. The two taxa can be reliably diagnosed by a combination of three ratios – PW/PB, EL/EW and EL/PL (Table 3).

Habitat. The Israeli site is located in the sand dunes of Western Negev. The species lives on the shifting dunes, together with *Atlantomasoreus groneri* Assmann, Renan & Wrase, 2015, *Discoptera arabica* Fairmaire, 1896, *Scarites striatulus* Dejean, 1825, *Thermophilum sexmaculatum* (Fabricius, 1787), *Graphipterus serrator* (Forsskål, 1775) (or *G. multiguttatus* (Olivier, 1790)), and a species of the *Cymindis setifeensis/suturalis* group(s). For a detailed description of the habitat see those of *Anthia sexmaculata*, *A. groneri* and *G. serrator* in Assmann et al. (2015a, 2015b) and Renan et al. (2018). Photographs of the habitat are given by Assmann et al. (2015a, fig. 7b, p. 62) and Renan et al. (2018, fig. 14, p. 59).

Distribution. Northeast part of Egypt (not yet found in Sinai Peninsula, but possibly occurring there), southwestern part of Israel (Southern District), see Fig. 18. The record from Holot Haluza is the first record for *P. brunneus* (s.l.) for Israel and for the Asian continent.

16. *Platyderus* (*Eremoderus*) *insignitus* Bedel, 1902

Figs 4A, 9E, 11D, 15C, Table 3

Diagnosis. This species differs from *P. brunneus brunneus* in pronotum less constricted to base (PW/PB: 1.12–1.17, vs. PW/PB: 1.21–1.28) and with apex appreciably narrower than base (PA/PB: 0.80–0.85, vs. PA/PB: 0.88–0.92). Median lobe of aedeagus somewhat longer than that in *P. brunneus* (s.l.), with ventral sclerite longer and not forming a distal kink (Figs 9E, 11D).

Redescription. ***Habitus.*** Moderately large species (BL: 6.60–8.70 mm; BW: 2.20–3.00 mm), with elongate, narrow and moderately convex body (Fig. 4A). ***Measurements and ratios.*** See Table 3. ***Color and lustre.*** Chestnut-colored as palpi, with antennae and legs usually lighter than rest of body, head somewhat darker than pronotum and elytra. Integument shiny. ***Microsculpture and punctation.*** Pronotum and elytra with isodiametric sculpticells. Ventral surface with impressed slight stretched isodiametric sculpticells or with microsculpture less apparent or scarcely-visible. Head impunctate, usually smooth, but lateral areas adjacent to frontal furrows sometimes with fine wrinkles. Surface of pronotum impunctate, largely smooth, basal area medially behind posterior transverse impression longitudinally wrinkled, rarely apical part medially in front of anterior transverse impression also wrinkled; basal foveae and adjacent lateral areas smooth. Elytral intervals without apparent punctation. Abdominal ventrite 1 finely wrinkled in whole, 2–5 finely wrinkled at sides. ***Head.*** About two thirds as wide as pronotum (PW/HW= 1.35–1.45). Eye long, convex. Labrum slightly shorter than clypeus, subrectangular, with anterior margin concave medially. Frontoclypeal suture more or less

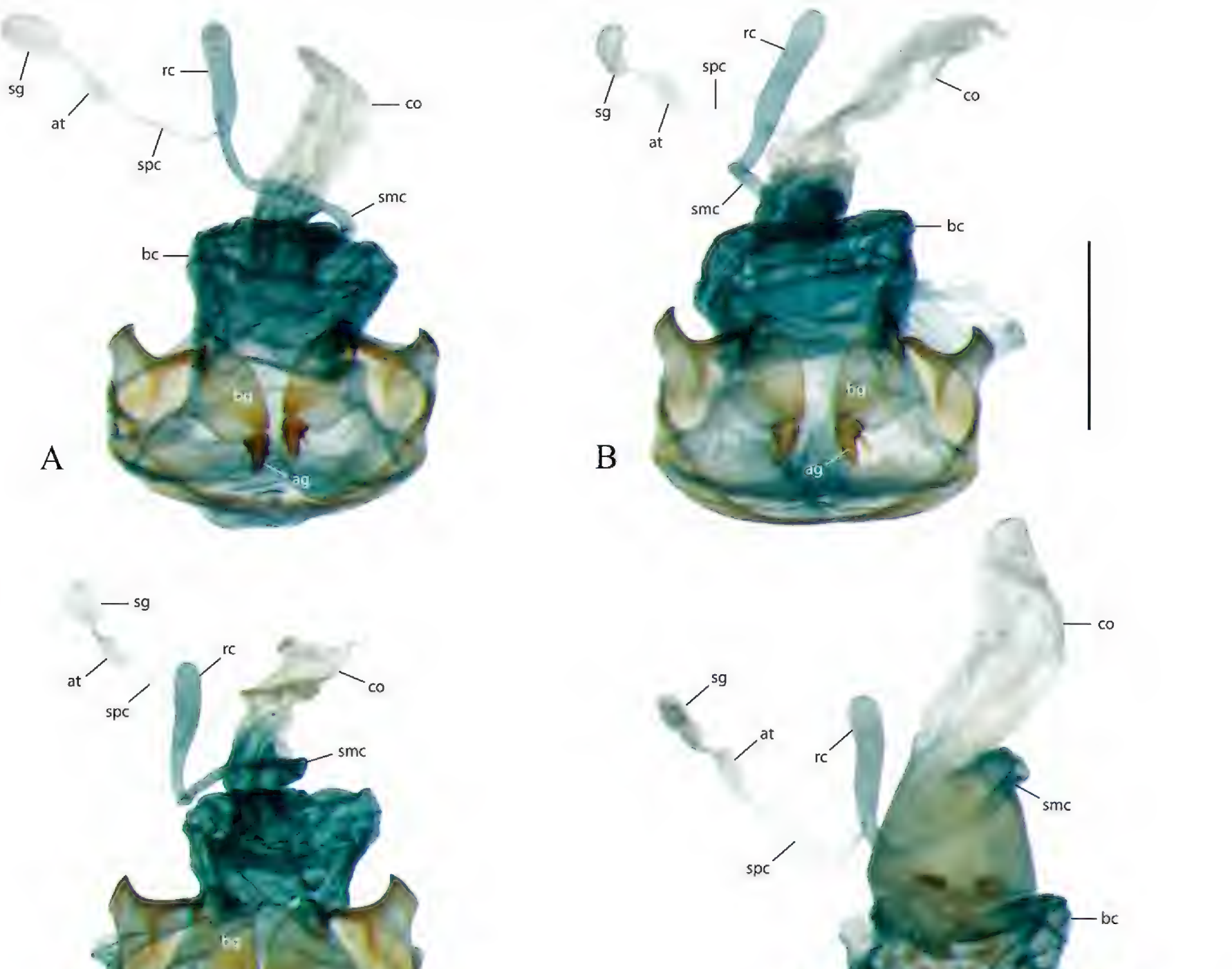

Figure 15. Spermathecal complex and gonocoxites, ventral view. **A.** *Platyderus* (*Eremoderus*) *brunneus brunneus* Karsch, 1881, female specimen, Bukamash, Nuqat al Khams District, Libya; **B.** *P.* (*E.*) *brunneus ferrantei* Reitter, 1909, female specimen, Holot Haluza, Southern District, Israel; **C.** *P.* (*E.*) *insignitus insignitus* Bedel, 1902, female specimen, Plage Aglou, Sous-Massa Region, Morocco; **D.** *P.* (*E.*) *irakensis*, sp. nov., holotype; **E.** *P.* (*E.*) *jordanensis*, sp. nov., female paratype, N Wadi Musa, Ma'an Governorate, Jordan; **F.** *P.* (*E.*) *languidus* (Reiche & Saulcy, 1855), female specimens, Israel, Netanya 22.xii.1996, Central District, Israel. Scale bars: 0.5 mm. For abbreviations see captions on Fig. 13.

distinct in middle, indistinct or disappeared at sides. Frontal furrows very small, shallow, punctiform. Paraorbital sulci fine, backward not reaching level of posterior supraorbital pore. ***Thorax***. Pronotum about a tenth to a fifth wider than long (PW/PL= 1.06–1.17), widest point at second quarter. Anterior transverse impression absent, posterior transverse impression very shallow, barely distinct. Sides convex medially and anteriorly, slightly concave to base (somewhat more concave than in *P. brunneus*); anterior bead present laterally, reduced or lack in medial eight to tenth; basal bead present laterally, reduced to absent in medial fifth to half. Metepisternum slightly longer than wide or nearly as long as wide, MA/MI= 0.79–0.86. ***Elytra***. Oblong, about one-and-a-half times, or a little more, as long as elytra (EL/EW= 1.57–1.65), two-and-a-half times as long as pronotum (EL/PL= 2.41–2.61), and a half as wide as pronotum (EW/PW= 1.40–1.51), with widest point at medial third. Parascutellar striole and striae 1–7 rather shallow, impunctate or slightly punctate, stria 8 deeper than other striae; parascutellar striole not joining stria 1; bases of striae 1–7 mostly reduced, not reaching basal bead, rarely reaching it. Interval 3 with three discal setiferous punctures. Umbilicate setiferous series with 16 or 17 punctures on each side. ***Legs.*** Posterior side of profemur with one seta in basal third and one in medial third. Mesofemur mostly with 5–6 setiferous punctures on anterior side ventrally, rarely with 4 punctures. Anterior side of metafemur ventrally mostly with one seta in basal third and one in medial third or apical half (single specimen with two setae in basal half and two in apical half on one femur). ***Male genitalia.*** Median lobe of aedeagus in lateral view arcuate, with narrow basal bulb, long shaft and short, straight apex (Fig. 9E); same in ventral view straight, about 3.6–3.7 times longer than wide; apical lamella (dorsal view) short, almost symmetrical, rounded at tip and slightly concave at each side. Internal sac in lateral view (Fig. 9E) with ventral sclerite long, slightly broadened distally; same in ventral view (Fig. 11D), with dorsal sclerite large, forming two small left-sided protuberances and a broad right-sided protuberance, and with ventral sclerite narrow, straight and slightly broadened distally. ***Female genitalia*** (Fig. 15C). Apical gonocoxite with rounded apex and one dorsolateral ensiform seta. Spermathecal canal connected in medial third of receptaculum.

16.1. *Platyderus* (*Eremoderus*) *insignitus insignitus* Bedel, 1902

Figs 4A, 9E, 11D, 15C, 18, Table 3

Platyderus insignitus Bedel, 1902: 211 (type locality: "Mogador" [= Essaouira], Morocco).

References. *Platyderus insignitus*: Bedel 1902: 214; Csiki 1931: 769; Antoine 1957: 235–236; Jeanne 1996: 398; Lorenz 1998: 375; Hovorka and Sciaky 2003: 521; Lorenz 2005: 395; Machard 2017: 102; Machard 2019: 199. *Platyderus insignitus insignitus*: Hovorka 2017: 756.

Type material. Five syntypes should be present in MNHN, according to original description. Not examined.

Other material examined. Morocco: Casablanca-Settat Region: 1♀, 'Marokko (region Doukkala-Abda) / Bir Jdid between El Jadida / and Casablanca / 4.2.2003, leg. M. Egger' (cWR). Marrakesh-Safi Region: 1♀, 'SW-Morocco, 31.28 N / 09.46W, DIABAT (4 km / S Essaouira), 60 m // J. Kaláb leg., 17.XI.2003 / bushes, sandy dunes, / steppe' (cASL). Sous-Massa Region: 1♂, 'MAROKKO, s. w. TIZNIT / umg. TIZNIT, 50 m / Strand-AGLOU / I. Puchner, 2.III.2000' (cDOS); 1♀, 'SW-Morocco, 29.48N/09.50W / AGLOU PLAGE, 30 m, / J. Kaláb leg., 26–28.xi.2004 / sandy/grassy places, / half-desert' (cWR); 1♀, 'MOROCCO, Plage Aglou / NW Tiznit / 29°45'N, 9°54'W / 6 m, 6.V.2011 / lgt. P. Kabátek' (cWR).

TME: 5 specimens. TGE: 1♂, 1♀.

Diagnosis. See "Diagnosis" of *P. insignitus presaharensis*.

Habitat. Nothing is known about the bionomics of this species.

Distribution. According to the available data, *P. insignitus insignitus* is endemic to Morocco (Fig. 18). Antoine (1957: 236) stated that it is a sublittoral species living in the area between Oum er Rbia River to the north and the Anti-Atlas Mountain Range to the south. Machard (2017, 2019) noted that it inhabits the "Littoral atlantique de Casablanca à Agadir". The new data from the environs of Tiznit show that the species occurs south of the city of Agadir as well.

16.2. *Platyderus* (*Eremoderus*) *insignitus presaharensis* Lagar Mascaró, 1978

Fig. 18

Platyderus insignitus presaharensis Lagar Mascaró, 1978: 31 (type locality: "cueva [cave] Kef Aziza, Tazzouguert", Morocco).

References. *Platyderus insignitus presahariensis* [sic]: Hovorka 2017: 756.

Type material. Holotype probably in Museu de Ciències Naturals de Barcelona. Not examined.

Other material examined. None.

Diagnosis. Differs from nominotypical subspecies by pronotum sides more parallel to pronotum base and not sinuate before posterior angles, which are right and rounded, somewhat longer antennae, with antennomeres 9–11 exceeding pronotum base, and elytral striae well-impressed (Lagar Mascaró 1978: 31).

Habitat. The holotype was collected in the cave Kef Aziza, a 4.5 km long cave near river Oued Guir and village of Ksar Tazougart, one of the longest caves in Morocco. It seems to be a trogloxene or subtroglophile that tends to temporarily inhabit subterranean habitats, but also strongly associated with aboveground habitats.

Distribution. Errachidia Province, Drâa-Tafilalet Region, Eastern-Central Morocco (Fig. 18).

17. *Platyderus* (*Eremoderus*) *irakensis* sp. nov.

http://zoobank.org/95E89306-626A-468D-BA68-F16489ABB9F3

Figs 4B, 6C, 15D, 19, Table 3

Type locality. Iraq, Al Anbar Governorate, Ar Rutba District, ca. 115 km east of Ar-Rutbah Town.

Type material. ***Holotype*** ♀, 'IRAQ, Al-Anbar / Rutba, singled / 115 km. E of town / 8.I.1978 [w, h] // No. 350 / Topál & Zilahy [w, h]' (HNHM); paratype ♀, 'IRAQ, Al-Anbar / Rutba, singled / at 30 km W of / town, 9.I.1978 [w, h] // No. 351 / Topál & Zilahy [w, h]' (NMNHS).

TME: 2 specimens. TGE: 1♀.

Etymology. The specific epithet is a Latinized adjective, referring to the name of the country in which this new species was found.

Diagnosis. *Platyderus irakensis* is distinct from all other species of "*languidus*" group by the orange-brown color of integument (Fig. 4B), mesotarsomeres and metatarsomeres dorsally flattened and slightly grooved (Fig. 6C), pronotum with sides to base slightly convex and posterior angles laterally not prominent, and distal enlargement of bursa copulatrix (Fig. 15D); the last character may be an autapomorphy. Among Asian representatives of species group, it is the form with the highest mean values for EL/PL (= 2.69) and EL/EW (= 1.63), and, together with *P. arabicus* sp. nov., the one possessing lowest index for PW/PB (= 1.10).

Description. ***Habitus.*** Specimens of moderate size for *Platyderus* species (BL: 8.30–9.00 mm; BW: 2.90–3.20 mm), with elongate and fairly convex body (Fig. 4B). ***Measurements and ratios.*** See Table 3. ***Color and lustre.*** Body and appendages orange-brown, with head somewhat darker than the rest of the body and ventral surface lighter than dorsal surface. Integument slightly to moderately shiny, head and pronotum as shiny as elytra, ventral surface somewhat shinier than dorsal surface. ***Microsculpture and punctation.*** Pronotum with evident microreticulation, sculpticells regular isodiametric. Elytral intervals, scutellum and lateral gutter with distinct isodiametric sculpticells, sculpticells of basal margin more or less reduced. Ventral surface with isodiametric or slight transverse sculpticells, less apparent on epipleura and middle coxa. Head impunctate and smooth, only frontal furrows and lateral ends of clypeus, with very fine and short wrinkles. Pronotum surface mostly smooth, only apical part medially in front of anterior transverse impression and basal area medially behind posterior transverse impression longitudinally wrinkled; basal foveae and adjacent lateral areas shallowly punctate. Elytral intervals without evident punctures. Abdominal ventrites 1–3 finely wrinkled at sides, smooth medially. ***Head.*** About one time and a third as wide as pronotum (PW/HW= 1.30–1.32). Eyes long, moderately convex. Labrum subrectangular, barely shorter than clypeus, with anterior margin concave medially. Frontoclypeal suture distinct in middle, reduced at sides. Frontal furrows punctiform, shallow. Paraorbital sulci straight, fine, backward surpassing posterior margin of eye, not reaching level of posterior supraorbital pore. ***Thorax.*** Pronotum about a tenth wider than long (PW/PL= 1.13), with widest point at medial third. Anterior transverse impression indistinct; posterior transverse impression indistinct to barely distinct. Sides not sinuate, shallowly convex anteriorly, barely convex posteriorly; anterior bead present laterally, lacking or present in medial ninth to tenth; basal bead present laterally, reduced to absent in medial third. Metepisternum slightly longer than wide, MA/MI= 0.91–0.95. ***Elytra.*** Elongate, about one and two thirds as long as wide (EL/EW= 1.62–1.63), two and two thirds as long as pronotum (EL/PL= 2.65–2.72), and almost one and a half times as wide as pronotum (EW/PW= 1.45–1.47), with widest point at first half of third quarter. Parascutellar striole and striae 1–8 shallowly impressed, superficially to indistinctly punctate; striole short, not joining stria 1; bases of striae not reaching basal bead (except for stria 2 in paratype). Interval 3 with three discal setiferous punctures (posterior puncture lacking on left elytron of holotype), all adjoining stria 2; one additional discal puncture adjoining stria 4 at anterior quarter of right elytron of paratype. Umbilicate setiferous series with 16 punctures on left elytron and 17 on right elytron in holotype, respectively, with 16 and 15 punctures in paratype. ***Legs.*** Posterior side of profemur with one or two setae in basal third and one in medial third. Mesofemur mostly with 4 or 5 setiferous punctures on anterior side ventrally. Anterior side of metafemur ventrally with a few long setae, one in basal third and one-two in apical half. ***Male genitalia.*** Unknown. ***Female genitalia*** (Fig. 15D). Apical gonocoxite with rounded apex and one dorsolateral ensiform seta. Bursa copulatrix two-chambered, with a shorter, but wider basal part and a longer, but narrower apical enlargement. Spermathecal canal connected in basal third of receptaculum.

Comparisons. In addition to characters mentioned in "Diagnosis", the new species differs from *P. jordanensis* sp. nov., by: (1) head wider, compared to pronotum (PW/HW: 1.30–1.32, vs. PW/HW: 1.35–1.42); (2) pronotum with sides less constricted anteriorly and posteriorly (PW/PA: 1.34–1.38 and PW/PB: 1.09–1.11, vs. PW/PA: 1.39–1.52 and PW/PB: 1.15–1.22); (3) elytra longer compared to their width and the length of the pronotum (EL/EW: 1.62–1.63 and EL/PL: 2.65–2.72, vs. EL/EW: 1.56–1.60 and EL/PL: 2.41–2.60).

For differences between *P. irakensis* sp. nov. and *P. arabicus* sp. nov. and such between *P. irakensis* sp. nov. and *P. languidus*, see "Comparisons" under the latter species.

Habitat. Nothing is known about the bionomics of this species.

Distribution. It is currently known from two localities situated in the Ar Rutba District, which is the largest district of Al Anbar Governorate, Western Iraq (Fig. 19). The holotype was collected about 115 km east of Ar-Rutbah Town whilst the paratype was found about 30 km west of the same town. Most of the area of the Ar Rutba District is a high plateau.

18. *Platyderus* (*Eremoderus*) *jordanensis* sp. nov.

http://zoobank.org/A95FB1A6-43F7-4FFC-A202-05073CC72F90

Figs 4C, 6D, 7K, 9F, 11E, 12L, 15E, 19, Table 3

Type locality. Jordan, Ma'an Governorate, Al-Betrā' District, Little Petra, archaeological area, 30.3667, 35.4333.

Type material. ***Holotype*** ♂, 'JORDAN (Ma'an) / Little Petra, ca. 1000 m / archaeological area / 30°22'N/35°26'E / (narrow shaft beside / stony staircase) / 25.III.2016 Wrase & Laser [12B] [w, p]' (cWR). Paratypes: 1♀, 'Jordanien 1024 m / Prov Ma'an / W. Ziegler 9.3.2015 [w, p] // N Wadi Musa / 30°24'.15"N, 35°26'.53"E [w, p]' (cZIEG); 1♂, 'Jordania / Prov. Ma'an / n Wadi Musa 1023m / W.Ziegler 25.3.2016 [w, p] // Jabal al Bayda (Project / 30°24'291"N, 35°26'743"E [w, p]' (NMNHS); 1♂ 'S-Jordan: Wadi Rum / Qatar Spring / 29.51°N / 35.41°E / 1000–1100 m asl [w, p] // dry wadi with *Ficus* trees, 21.III.2017 / leg. Th. Assmann [w, p]" (cAL); 1♂, 'S-Jordan: Little Petra, ca. 1000m / wadis with Mediterranean trees in vicinity to the archaeological site / 30.34°N, 035.46°E / 25.III.2016 / leg. Th. Assmann [w, p]' (cAL).

TME: 5 specimens. TGE: 4♂♂, 1♀.

Etymology. The specific epithet is a Latinized adjective, based on the name of the country in which this species was found.

Diagnosis. Differs from all other species of the "*languidus*" group by the following set of characters: (1) meso- and metatarsomeres dorsally convex and smooth (Fig. 6D); (2) posterior angles of pronotum incompletely rounded, with tips protruding laterally (Fig. 4C); and (3) ventral margin of apex of median lobe (lateral view) evidently convex thus apex appears bent up (Fig. 9F).

Platyderus jordanensis sp. nov. and *P. languidus* share a trait that can be a mark for their close relationships, the apical gonocoxite without nematiform setae.

Description. ***Habitus.*** Specimens of large size for *Platyderus* species (BL: 8.70–9.90 mm; BW: 3.00–3.45 mm), with rather elongate and moderately convex body (Fig. 4C). ***Measurements and ratios.*** See Table 3. ***Color and lustre.*** Body and appendages uniformly light reddish-brown, palpomeres and legs somewhat lighter than rest of body. Integument slightly to moderately shiny, head and pronotum shinier than elytra. ***Microsculpture and punctation.*** Surface of pronotum with evident microreticulation, sculpticells regular isodiametric. Elytra (intervals, scutellum, basal margin and lateral gutter) with distinct isodiametric sculpticells. Ventral surface largely with more or less impressed isodiametric or slight transverse sculpticells. Head impunctate, nearly smooth, with a few, fine and shallow wrinkles in and laterally of frontal furrows. Pronotum surface mostly smooth, only basal area between foveae longitudinally wrinkled and adjacent lateral areas with rare and superficial punctures that do not reach anterior half. Elytral intervals without apparent punctation. Abdominal ventrite 1 finely wrinkled medially, smooth laterally, other ventrites neither wrinkled nor punctate. ***Head.*** One-third or more as wide as pronotum wide (PW/HW= 1.35–1.42). Eyes long, moderately convex. Labrum subrectangular, shorter than clypeus, with anterior margin concave medially. Frontoclypeal suture distinct in middle, indistinct at sides. Frontal furrows small, punctiform. Paraorbital sulci straight, backward surpassing posterior margin of eye, hardly reaching level of posterior supraorbital pore. ***Thorax.*** Pronotum about a tenth wider than long (PW/PL= 1.08–1.13), with widest point at medial third. Anterior transverse impression absent; posterior transverse impression barely distinct. Sides sinuate, convex medially and anteriorly, slightly concave posteriorly; anterior bead present laterally, lacking or present in medial 1/10; basal bead present laterally, reduced to absent in medial third or medial half. Metepisternum somewhat longer than wide, MA/MI= 0.88–0.91. ***Elytra.*** Elongate, about one and a half times or little more as long as elytra width (EL/EW= 1.56–1.60), two-and-a-half-times as long as pronotum (EL/PL= 2.41–2.60), and a bit less than a half as wide as pronotum (EW/PW= 1.39–1.46), with widest point at medial third. Parascutellar striole linear, as impressed as other striae, not joining stria 1; striae 1–8 and striole slightly to indistinctly punctate; base of stria 1 ending in parascutellar pore, striae 2–5 reaching or barely not reaching basal bead, 6 and 7 ending little before basal bead. Interval 3 with three discal setiferous punctures. Umbilicate setiferous series with 16 punctures on each elytron in three specimens examined, including holotype. ***Legs.*** Posterior side of profemur with one or two setae in basal third and one in medial third. Mesofemora with 6 (holotype) or 5 (both paratypes) setiferous punctures on anterior side ventrally. Anterior side of metafemur ventrally with two long setae, one in basal third and one in medial third. ***Male genitalia.*** Urite IX subtriangular, with proximal margin symmetrical and pointed at apex (Fig. 7K). Median lobe of aedeagus in lateral view slender, with narrow basal bulb, shaft broad with proximal part slightly constricted, and short, straight apex (Fig. 9F); median lobe in ventral view straight, 3.7 times longer than wide; apical lamella (dorsal view) rather short, nearly symmetrical, rounded at tip, with sides straight to slightly concave. Internal sac in lateral view (Fig. 9F) with ventral sclerite slightly broadened and rounded distally; same in ventral view (Fig. 11E), with dorsal sclerite large, having small left-sided and large right-sided protuberance, and ventral sclerite straight and rather narrow. Right paramere as on Fig. 12L. ***Female genitalia*** (Fig. 15E). Apical gonocoxite with widely rounded apex and one dorsolateral ensiform seta. Spermathecal canal connected in basal third of receptaculum.

Comparisons. In additions to characters mentioned in "Diagnosis", *P. jordanensis* sp. nov. differs from geographically close *P. brunneus ferranei* by pronotum less wide (PW/PL: 1.08–1.13, vs. PW/PL: 1.14–1.21), with anterior margin narrower than posterior margin (PA/PB: 0.78–0.87, vs. PA/PB: 0.88–0.92).

For differences between *P. jordanensis*, from one side, and *P. languidus*, *P. irakensis* and *P. arabicus*, from other side, see sections "Comparisons" (under the first two species) and "Diagnosis" (under *P. arabicus*).

Habitat. In Little Petra *P. jordanansis* sp. nov. lives in wadis that have a canyon-like profile and some Mediterranean tree species. There it lives together with

Figure 16. Distribution of species from subgenus *Eremoderus* in the western Aegean Sea Region and Turkey: *Platyderus chatzakiae* sp. nov. (red circle), *P. weiratheri* (blue circles), *P. vanensis* sp. nov. (brown circles), and *P. vrabeci* sp. nov. (yellow circle).

Laemostenus quadricollisquadricollis L. Redtenbacher, 1843, *Trechus crucifer* Piochard de la Brûlerie, 1876, *Calathus cinctus* Motschulsky, 1850, *Cymindis andreae* Ménétriés, 1832, and *Carabus impressus* Klug, 1832. In Wadi Rum the single specimen was found in a dry wadi with *Retama* shrubs and single *Ficus* trees in the shade of the walls of the head of the canyon-like valley. It occurs together with ground beetles that are mainly typical for desert habitats (*Laemostenus aegyptiacus* Schatzmayr, 1936, *Singilis filicornis* Peyerimhoff, 1907, *Cymindis hierichontica* Reiche & Saulcy, 1855, *Merizomena castanea* Klug, 1832, and *Amara maindroni* Bedel, 1907). A photograph of the habitat of the latter is given by Casale and Assmann (2017: 22, fig. 35).

Distribution. According to the data available, the species is the representative of the group "*languidus*" in the southern part of Jordan, stretching from the vicinity of Little Petra to areas close to the Saudi Arabian border (Fig. 19). As Wadi Rum is in the most southern part of Jordan, the species may also occur in Northwest Saudi Arabia.

19. *Platyderus* (*Eremoderus*) *languidus* (Reiche & Saulcy, 1855)

Figs 4D, E, 5I, 6E, 7L, M, 9G, H, 11F, G, 12M, N, 15F, 19, Table 3

Feronia (*Argutor*) *languida* Reiche & Saulcy, 1855: 610 (type locality: "Jordanis", based on lectotype designation).

= *Sphodrus parumstriatus* Fairmaire, 1872: 47 (type locality: "inconnue…probably qu'il appartient à la faune méditerranéenne"). Synonymy established by Bedel (1906: 91).

Note on type locality. The specimens were collected from: "Des bords du Jourdain et de la mer Morte" (Reiche and Saulcy 1855: 610).

References. *Platyderus languidus*: Chaudoir 1866: 108–109; Piochard de la Brûlerie 1876: 428, 430; Bedel 1902: 211; Sahlberg 1903: 3–4; Bedel 1906: 91; Csiki 1931: 769; Jedlička 1963: 20, 22; Israelso 1990: 165; Jeanne 1996: 398; Lorenz 1998: 375; Hovorka and Sciaky 2003: 521; Lorenz 2005: 396; Hovorka 2017: 756.

Type material. *Feronia languida* Reiche & Saulcy, 1855. Consists of four syntypes, 2♂♂, 2♀♀ in MHNG, all conspecific. All the specimens quite dirty and damaged. Three of them were preserved in pinned condition, whereas a male below designated as paralectotype, together with the extracted genitalia (without the urite preserved), was glued on a card; originally this specimen was pinned. The last specimen has been labelled as holotype by the late Claude Jeanne, but such a treatment was incorrect because at least four type specimens exist belonging to one species, all of them bearing the well-known yellow handwritten labels of Louis Jérome Reiche (1799–1890); all specimens have the status of syntypes.

We chose for lectotype designation a male specimen with the label "Jordanis" in order to retain the type locality "Jordanis" that is in accordance with the locality that was given in the description (Reiche and Saulcy 1855). Although rather damaged, we took a picture of its habitus and examined its genitalia (Fig. 4D). Afterwards, the lectotype specimen was glued onto a white card, and its genitalia were embedded in Euparal on a second smaller white card pinned below the specimen.

The four specimens are labelled, as follows: lectotype ♂, 'Jordanis [h, y] // Coll. Reiche [p, w] // PARATYPE Feronia / languida R. & S / C. JEANNE des. 1990 [p, h, r] // Platyderus / languidus R. & S. / JEANNE det. 1990 [p, w]'; paralectotype ♂, 'Platyderus / languidus. Reiche / Soc. Ent. 1855. 610 / Syria [h, y] // Coll. Reiche [p, w] // HOLOTYPE Feronia / languida R. & S. / C. JEANNE des. 1990 [p, h, r] // Platyderus / languidus

R. & S. / JEANNE det. 1990 [p, w]'; paralectotype ♀, 'Nazareth [h, y] // Coll. Reiche [p, w] // PARATYPE Feronia / languida R. & S / C. JEANNE des. 1990 [p, h, r] // Platyderus / languidus R. & S. JEANNE det. 1990 [p, w]'; paralectotype ♀, 'Palæstina [h, y] // Coll. Reiche [p, w] // // PARATYPE Feronia / languida R. & S / C. JEANNE des. 1990 [p, h, r] // Platyderus / languidus R. & S. JEANNE det. 1990 [p, w]'.

Besides, all the four specimens have two supplementary labels subsequently added (Fig. 4D), one printed in MHNG, 'Platyderus / langidus [sic] Reiche / 'Syrie' [pencil crossed off] / Label MHNG 2010 [p, w]', and, one lectotype [or paralectotype] label added by the first revising authors in the context of this work.

A further fifth syntype exists in MNHN, but in view of its too damaged body and imprecise location, it was not subject of lectotype designation (see "Imprecise locality").

Other material examined. Imprecise locality: single specimen of uncertain sex, with missing left antennae, fore tarsi, middle and hind legs '*languida* Reiche [h, w] // cotype de Reiche cite par Chaudoir [h, w] // Ex Musæo Mniszech [p, w] // L. Bedel Vidit 1902. [p, w]', (MNHN; ex-collection Chaudoir, box N° 218 "*Platyderus Oxycrepis Stolonis Loxandrus*").

Israel: Northern District: 1♂, 'ISRAEL: Hammat / Gader / 8.v.1997 / V. CHIKATUNOV' (SMNH-TAU). Central District: 1♀, 'Beit-Berl / 13.2.68 // COLLECTED BY KUTY YEFENOF' (SMNH-TAU); 1♀, 'Israel Netanya / 30.11.96 / R. Hoffman' (SMNH-TAU); 1♂, 'Israel Netanya / 14.12.96 / R. Hoffman' (SMNH-TAU); 1♀, 'Israel Netanya / 21.12.96 / R. Hoffman' (SMNH-TAU); 1♂, 'ISRAEL: / Netanya 22.xii.1996 / V. Chikatunov' (SMNH-TAU); 1♀, 'Israel Netanya / 30.12.96 / R. Hoffman' (NMNHS); 2♀♀, 'Israel Netanya / 18.1.97 / R. Hoffman' (SMNH-TAU); 1♀, 'Israel Netanya / 1.3.97 / R. Hoffman' (SMNH-TAU). Jerusalem District: 1♀, 'Jerosalim // *Tapinopterus insidiosus* Frm.' (MFNB); 1♂, 'Jerusalem / Syria // ex coll. A. Jedlička / National Museum / Prague, Czech Republic // languidus / Reiche / det. Ing. Jedlička' (NMPC); 1♀, 'Jerosalim 30.XII.25' (MIZ); 1♂, 'PALESTINE. / F.S. Bodenheimer. // Press by / Imp. Inst. Ent. / B.M. 1944–97. // Jerusalem / scopus / 26.XII.33' (NHMUK). Judea and Samaria Area: 1♀, 'PALESTINE / Jerusalem - / Jericho Road / Bytinski-Salz / km 18. / 14.ii.1940' (SMNH-TAU); 1♂, 'Jerusalem Jericho / Road km 18 / Palestine 17.ii.1940 / leg. Bytinski-Salz' (SMNH-TAU); 1♀, 'PALESTINE / Kv. Schiller / 25.ii. 19 / leg. Bytinski-Salz // Platyderus / languidus R. / det. Ing. Jedlička' (SMNH-TAU); 2♂♂, 1♀, 'ISRAEL: South-facing / slope of Naḥal Perat [= Naḥal Prat] / 28.ii.2007 / L. FRIEDMAN' (SMNH-TAU); 1♂, 'ISRAEL / Eshkolot / 18.iii.2007 / I. SCHTIRBERG' (SMNH-TAU). Southern District: 1♂, 1♀, 'W-Israel / Nizzanim / S of Ashdod // 5.XII.2008 / leg. Th. Assmann' (cASL); 1♀, 'Ashkelon / 7.4.2017 / I. Renan // FS' (cWR); 1♂, 'Ashdod / 11.4.2017 / I. Renan // GM' (SMNH-TAU).

TME: 30 specimens. TGE: 4♂♂, 2♀♀.

Diagnosis. A species of medium size for *Platyderus* (*Eremoderus*), with light reddish-brown integument, meso- and metatarsomeres dorsally convex and smooth (Fig. 6E), and pronotum from widest point to apex slightly to moderately constricted (PW/PA: 1.31–1.41), with sides to base straight (rarely slightly concave). Posterior angles of pronotum subrounded, with tips not protruding laterally (most cases) or very slightly protruding (few cases – as in *P. jordanensis* sp. nov.). Median lobe of aedeagus (lateral view) with proximal part, including basal bulb, rather long and slender, forming an angle with distal part of lobe smaller compared to other members of the "*languidus*" group (Fig. 9G, H).

Figure 17. Distribution of species from subgenus *Eremoderus* in Iran and Afghanistan: *Platyderus felixi* sp. nov. (red circle), *P. iranicus* sp. nov. (blue circles), *P. lassallei* sp. nov. (yellow circles), *P. davatchii* (green triangle), *P. ledouxi* (red triangle), *P. taghizadehi* (blue triangle), *P. klapperichi* sp. nov. (black triangle), and *P. afghanistanicus* sp. nov. (red question mark).

Redescription. ***Habitus.*** Specimens of moderate to large size for *Platyderus* species (BL: 6.40–9.10 mm; BW: 2.20–3.15 mm), with elongate and moderate convex body (Fig. 4D, E). ***Measurements and ratios.*** See Table 3. ***Color and lustre.*** Body and appendages uniformly yellow brown to reddish-brown, usually head darker than the rest of the body. Integument slightly to moderately shiny, head and pronotum as shiny as elytra. ***Microsculpture and punctation.*** Pronotum with evident microreticulation, sculpticells regular isodiametric. Elytra (including intervals, basal margin and lateral gutter) with distinct isodiametric sculpticells. Ventral surface with more or less well-impressed isodiametric or slight transverse sculpticells or with sculpticells less apparent or scarcely-visible. Head smooth, including area of frontal furrows, sometimes clypeus with fine and shallow longitudinal wrinkles, disc micropunctate. Pronotum surface largely smooth, only apical part medially in front of anterior transverse impression and basal area medially behind posterior transverse impression longitudinally wrinkled; basal foveae and adjacent lateral areas mostly smooth, rarely shallowly punctate. Elytral intervals with very superficial and scattered punctures, or without such ones. Abdominal ventrites 1–3 finely wrinkled. ***Head.*** About one-third or more as wide as pronotum (PW/HW= 1.27–1.38). Eyes long, slightly to moderately convex. Labrum subrectangular, shorter than clypeus, with anterior margin concave medially. Frontoclypeal suture distinct in middle, reduced to disappeared at sides. Frontal furrows small, punctiform. Paraorbital sulci fine, backward surpassing posterior margin of eye, almost reaching level of posterior supraorbital pore. ***Thorax.*** Pronotum one tenth to one fifth wider than long (PW/PL= 1.11–1.22), with widest point at second quarter. Anterior transverse impression absent, posterior transverse impression barely distinct. Sides sinuate, convex medially and anteriorly, straight to slightly concave posteriorly; anterior bead present laterally, lack or present in medial tenth; basal bead present laterally, reduced to absent in medial third to medial half. Metepisternum slightly longer than wide, MA/MI= 0.87–0.95. ***Elytra.*** Elongate, about one-and-a-half times or little more as long as elytra (EL/EW= 1.52–1.62), two-and-a-half-times as long as pronotum (EL/PL= 2.42–2.60), and a third to a half as wide as pronotum (EW/PW= 1.29–1.48), with widest point at medial third or third quarter. Parascutellar striole short, less impressed than other striae, not joining stria 1; striae 1–8 and striole superficially punctate; base of stria 1 ending in parascutellar pore, striae 2–6 reaching or not reaching basal bead, 7 ending before basal bead. Interval 3 with three discal setiferous punctures, as location of first varies (adjacent to stria 3, in midst of interval 3, or adjacent to stria 2). Umbilicate setiferous series mostly with 16 punctures on each elytron. ***Legs.*** Posterior side of profemur with one or two setae in basal third and one or two in medial third. Mesofemur mostly with 5 setiferous punctures on anterior side ventrally (Fig. 5I). Anterior side of metafemur ventrally with a few long setae, one in basal third and one to three in apical half. ***Male genitalia.*** Urite IX subovate to subtriangular, with proximal margin nearly symmetrical and subacuminate at apex (Fig. 7L, M). Median lobe of aedeagus in lateral view slender, with long and narrow basal bulb, long and broader shaft, and short, almost straight apex, as angle between front and rear halves relatively small (Fig. 9G, H); median lobe in ventral view straight, 3.5–

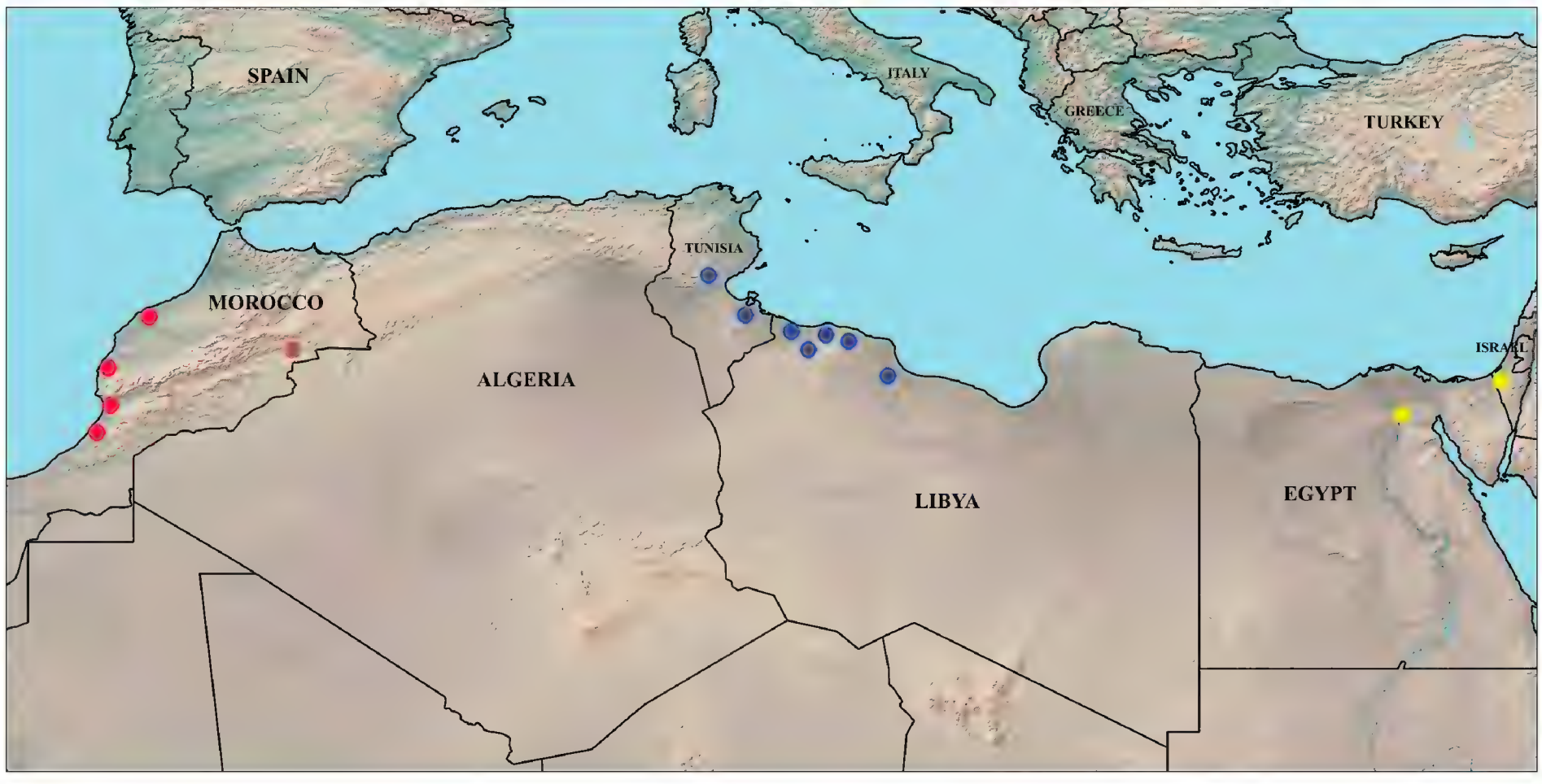

Figure 18. Distribution of species from subgenus *Eremoderus* in continental North Africa and the southern Levant: *Platyderus brunneus brunneus* (blue circles), *P. brunneus ferrantei* (yellow circles), *P. insignitus insignitus* (red circles), and *P. insignitus presaharensis* (brown circle).

3.7 times longer than wide; apical lamella (dorsal view) short, nearly symmetrical, rounded at tip, with right side straight to convex and left side barely concave. Internal sac in lateral view (Fig. 9G, H) with ventral sclerite broadened and rounded distally; same in ventral view (Fig. 11F, G), with dorsal sclerite large, reticulate, with lateral protuberances distinct, and ventral sclerite narrow and nearly straight. Right paramere as on Fig. 12M, N. ***Female genitalia*** (Fig. 15F). Apical gonocoxite semi-pointed apex and one dorsolateral ensiform seta. Spermathecal canal connected in basal third of receptaculum.

Comparisons. *P. languidus* and *P. jordanenis* sp. nov. differ in characters noted in "Diagnosis" under the latter species.

P. languidus distinguishes from both *P. brunneus* and *P. irakensis* sp. nov. by meso- and metatarsomeres dorsally neither flattened nor grooved (vs. meso- and metatarsomeres dorsally more or less flattened and grooved), see Fig. 6E. Additionally, it is distinct from *P. brunneus* in the pronotum less cordate, with sides less concave and less constricted toward base. The species differs from *P. irakensis* sp. nov. by the less long elytra compared to the length of the elytra and pronotum (EL/EW: 1.52–1.62 and EL/PL: 2.42–2.60, vs. EL/EW: 1.62–1.63 and EL/PL: 2.65–2.72).

Habitat. The records from the Coastal Lowlands of Israel refer to dune habitats close to the shores of the Mediterranean Sea. *Platyderus languidus* co-occurs there together with *Carabus impressus* Klug, 1832, *Masoreus aegyptiacus* Dejean, 1828, *Graphipterus sharonae* Renan & Assmann, 2018, and some eurytopic ground beetle species (see habitat characterization in Assmann et al. 2008, 2015a; Renan et al. 2018). Photographs of this type of habitat are given in Assmann et al. (2008, fig. 17, p. 17, 2015a, fig. 8b, p. 63) and Renan et al. (2018, fig. 15, p. 63). The other habitats in Nahal Prat (= Wadi Kelt) must differ from these ones as there are no typical dune habitats.

Distribution. *Platyderus languidus* was cited for Morocco, Libya, Egypt (incl. Sinai), Syria and Israel (Jedlička 1963: 22; Hovorka 2017: 756). Machard (2017: 102, 2019: 199) included it in the list of the Moroccan Carabidae noting that its "Présence au Maroc non confirmée". The review of published and new material showed that the species does not live in Africa. All examined material of *Platyderus* (*Eremoderus*) from Tunisia, Libya and Egypt should be referred to *P. brunneus* (see above). The species records of *P. languidus* for Morocco are also based on former misinterpretations and should concern *P. insignitus*. Certainly occurs only in Israel (Fig. 19). May live also in the southernmost area of Syria.

Notes. Léon Fairmaire described his *Sphodrus parumstriatus* without indication of an exact locality. This author mentioned only that it comes from "*La localité qu'il habite est inconnue, mais il est plus que probable qu'il appartient à la faune méditerranénne*". Later on, Bedel (1906: 91) established the synonymy of *S. parumstriatus* with *Feronia languida* and stated: "*Le type, dont la provenance restait ignorée, provient manifestement des récoltes de F. de Saulcy en Palestine. J'ai pu l'examiner grâce à l'extrème amabilité de M. J. Magnin, son possesseur actuel*". In

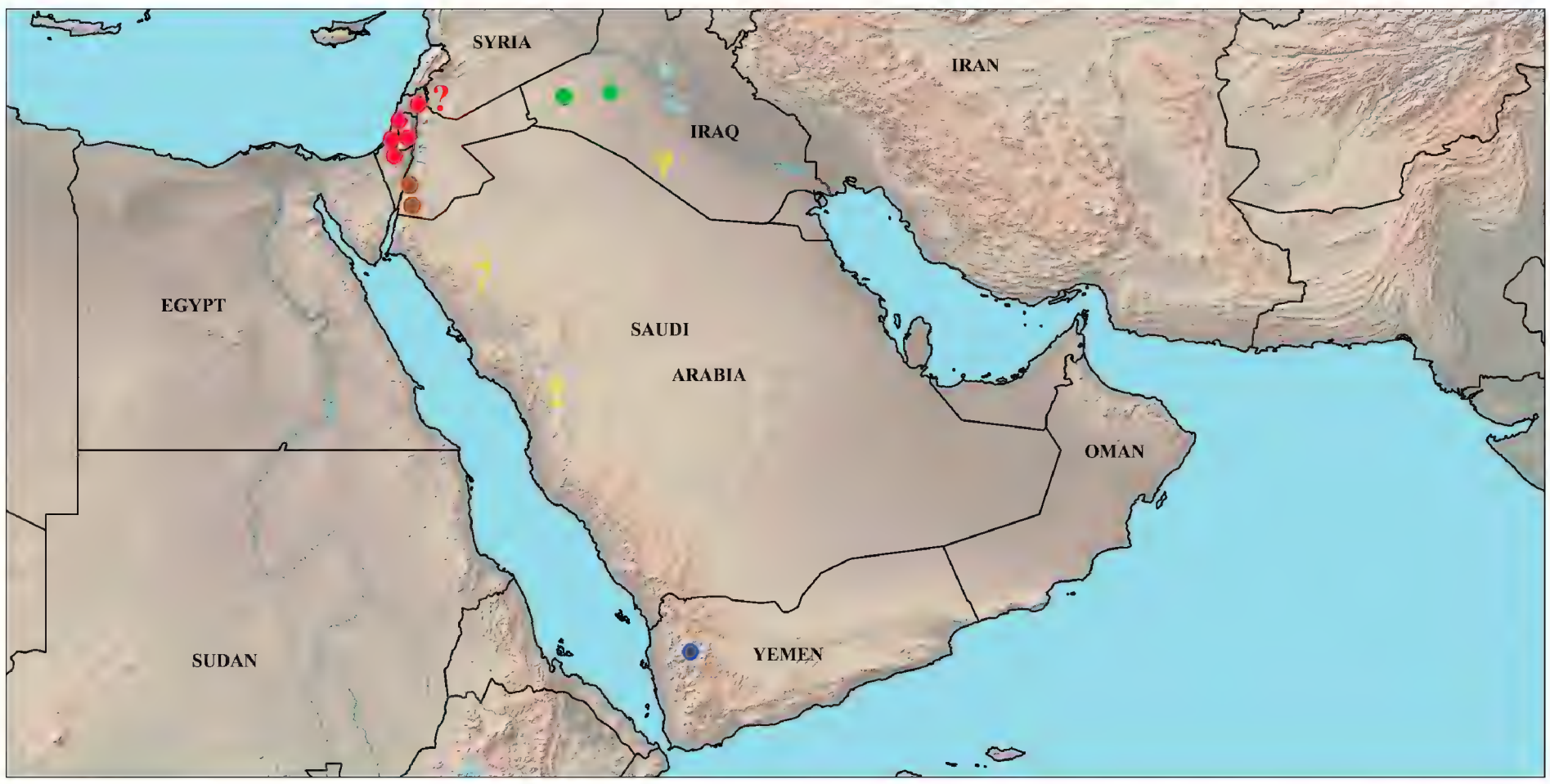

Figure 19. Distribution of species from subgenus *Eremoderus* in the Levant and the Arabian Peninsula: *Platyderus arabicus* sp. nov. (yellow question marks), *P. brunki* sp. nov. (blue circle), *P. irakensis* sp. nov. (green circles), *P. jordanensis* sp. nov. (brown circles), and *P. languidus* (red circles).

2016, one of us (BG) looked for the type material of *S. parumstriatus* in MNHN, a depository where the ex-collection of L. Fairmaire is housed now, but nothing has been found. Subsequently, in a correspondence with BG (pers. comm.), Dr. Th. Deuve said: "*Nous n'avons pas la collection Magnin et j'ignore où elle se trouve. Certains spécimens ont pu être dispersés et pourraient être dans la collection du Muséum, mais je ne connais pas le type de Sphodrus parumstriatus Fairmaire. De toute façon, les types de Fairmaire sont toujours très difficile à trouver. En général, nous n'en retrouvons que 50%*".

It is worth noting that the distance between the closest known localities of *P. brunneus ferrantei* and *P. languidus* in south Israel, respectively Holot Haluza (being the northeasternmost locality of the former species) and Ashkelon (being the southwesternmost one of the latter species), is about 65 km in a straight line. By supposition, the two species occur in different types of habitats.

Key to the male specimens of subgenus *Eremoderus* Jeanne from Africa and Southwest Asia

(key does not include *P. davatchii* Morvan, for which diagnostic characters remain unstudied)

1 Ventral sclerite of internal sac obliquely situated with respect to main axis of median lobe (ventral view) and distinctly bent in middle (lateral view) (Figs 8A, B, 10A, B) ("*weiratheri*" species group)..... 2
– Ventral sclerite of internal sac parallel to main axis of median lobe (ventral view) and straight (lateral view) (Figs 8C–I, 9B–H, 10C–I, 11A–G)..... 3
2 Width of body more than 2.7 mm. Elytra length / pronotum length small (EL/PL= 2.50 or less; Table 1). Anterior discal puncture in midst of elytral interval 3..... *Platyderus* (*Eremoderus*) *chatzakiae* sp. nov.
– Width of body less than 2.7 mm. Elytra length / pronotum length large (EL/PL= 2.55–2.83; Table 1). Anterior discal puncture adjoining elytral stria 3..... *Platyderus* (*Eremoderus*) *weiratheri* Mařan, 1940
3 Ventral sclerite of internal sac of median lobe (lateral view) significantly widened anteriorly, three and more times wider at distal 1/3 than at proximal 1/3 (Fig. 8C–F). Prosternum laterally and proepisternum coarsely and densely punctate ("*iranicus-vanensis*" species group)..... 4
– Ventral sclerite of internal sac of median lobe (lateral view) slightly widened anteriorly, a half to two times wider at distal 1/3 than at proximal 1/3 (Figs 8G–I, 9B–H). Prosternum laterally and proepisternum less coarsely and scarcely punctate..... 7
4 Size of body small (< 6.7 mm), except for *P. felixi* sp. nov. with EL/EW <1.6. Parascutellar striola and striae 1–8 finely punctate (Fig. 1C, D). Right paramere short, considerably crooked ventrally (Fig. 12C, D). Specimens from Iran..... 5
– Size of body large (> 6.7 mm), with EL/EW >1.6. Parascutellar striola and striae 1–8 moderately to coarsely punctate (Figs 1E, F, 2A). Right paramere long, less crooked ventrally (Fig. 12E). Specimens from Turkey..... 6
5 Pronotum narrow compared to head (PW/HW ≤1.45). Elytra more considerably wider than long (EL/EW ≥1.55). Small specimens (BL= 4.30–6.65 mm)..... *Platyderus* (*Eremoderus*) *iranicus* sp. nov.
– Pronotum wide compared to head (vs. PW/HW ≥ 1.45). Elytra less considerably wider than long (EL/EW ≤1.55, vs. EL/EW ≥1.55). Large specimens (BL= 6.00–7.00 mm)..... *Platyderus* (*Eremoderus*) *felixi* sp. nov.
6 Color light, rusty red. Elytral striae and striola less coarsely and deeply punctate (Fig. 1F); all intervals with distinct sculpticells. Apical lamella of median lobe (dorsal and ventral view) more symmetrical and somewhat shorter (Fig. 10F)..... *Platyderus* (*Eremoderus*) *vrabeci* sp. nov.
– Color dark reddish-brown (some specimens with elytra entirely black). Elytral striae and striola coarsely and deeply punctate (Fig. 1E); only intervals 6–9 with more or less distinct sculpticells. Apical lamella of median lobe (dorsal and ventral view) partly asymmetrical and somewhat more elongate (Fig. 10E)..... *Platyderus* (*Eremoderus*) *vanensis* sp. nov.
7 Basal foveae of pronotum and adjacent lateral areas as well as mesepisternum, metasternum laterally and metepisternum moderately punctate (Fig. 2B–E). Ventral sclerite of internal sac (ventral view) with distal end curved to left (Fig. 10G–I). Specimens from North Iran..... 8
– Basal foveae of pronotum and adjacent lateral areas as well as mesepisternum, metasternum laterally and metepisternum scarcely punctate to impunctate (Figs 3A–F, 4A–E). Ventral sclerite of internal sac (ventral view) with distal end straight throughout or curved to left (Fig. 11A–G). Specimens from other countries..... 11
8 Body (excl. appendages) black. Pronotum sides toward base nearly straight to slightly concave. Dorsal surface of head and base of pronotum with extensive and denser punctation. Median lobe of aedeagus less than those of the species of "*davatchii*" species group curved ventrally, with apex not turned upward (lateral view). Length of body: 8.00–8.50 mm ..... *Platyderus* (*Eremoderus*) *lassallei* sp. nov.
– Body (excl. appendages) light to dark brown. Pronotum sides toward base significantly concave. Dorsal surface of head and base of pronotum with less extensive and sparser. Median lobe of aedeagus more curved ventrally, with apex somewhat turned upward (lateral view) ("*davatchii*" species group). Length of body less than 8.00 mm)..... 9

9 Pronotum in relation to head less wide (PW/HW= 1.27; Fig. 2C). Small specimens (BL less than 7 mm) ..... *Platyderus* (*Eremoderus*) *klapperichi* sp. nov.
– Pronotum in relation to head wider (PW/HW >1.30; Fig. 2D, E). Large specimens (BL more than 7 mm) 10
10 Pronotum in relation to head wider (PW/HW >1.40), with apex compared with widest point more constricted (PW/PA >1.40). Elytra in relation to pronotum narrower (EW/PW <1.38). Anterior side of mesofemur ventrally with four setiferous punctures ..... *Platyderus* (*Eremoderus*) *ledouxi* Morvan, 1974
– Pronotum in relation to head less wide (PW/HW= 1.31–1.33), with apex compared with widest point less constricted (PW/PA <1.40). Elytra in relation to pronotum wider (EW/PW >1.38). Anterior side of mesofemur ventrally with three setiferous punctures ..... *Platyderus* (*Eremoderus*) *taghizadehi* Morvan, 1974
11 Disc of head and pronotum with reduced sculpticells. Pronotum wider (PW/PL >1.22, Table 2), with basal beads present throughout. Elytra in relation to pronotum longer (EL/PL =2.78). Specimens from Afghanistan ..... *Platyderus* (*Eremoderus*) *afghanistanicus* sp. nov.
– Disc of head and pronotum with complete microreticulation. Pronotum narrower (PW/PL ≤1.22), with basal bead reduced to absent in basal third to half. Elytra in relation to pronotum shorter (EL/PL <2.75). Specimens from other countries ("*languidus*" species group) 12
12 Meso- and metatarsomeres dorsally convex and smooth (Fig. 6D). Tips of posterior angles protruding laterally (Fig. 4C). Ventral margin of apex of median lobe evidently convex thus apex appears slightly bent up (Fig. 9F) ..... *Platyderus* (*Eremoderus*) *jordanensis* sp. nov.
– Metatarsomeres dorsally convex or not (Fig. 6A, B, E). Ventral margin of apex of median lobe straight to apex (Fig. 9C–E, G, H) 13
13 Meso- and metatarsomeres dorsally somewhat flattened and slightly grooved (Fig. 6A, B) 14
– Meso- and metatarsomeres dorsally convex and not grooved (Fig. 6E) 15
14 Parascutellar striola and elytral striae 1–7 very shallow, nearly indistinct, with bases more or less reduced, not reaching basal bead. Width of pronotum posterior margin usually large compared to pronotum maximum width and width of anterior margin (PW/PB >1.1, PA/PB >0.88, Table 3) ..... *Platyderus* (*Eremoderus*) *brunneus brunneus* Karsch, 1881
– Parascutellar striola and elytral striae 1–7 distinct, slightly impressed, with bases reaching basal bead. Width of pronotum posterior margin usually small compared to pronotum maximum width and width of anterior margin (PW/PB <1.23, PA/PB <0.89, Table 3) ..... *Platyderus* (*Eremoderus*) *brunneus ferrantei* Reitter, 1909
15 Median lobe of aedeagus with basal bulb shorter and ventral sclerite of internal sac longer (Figs 9E, 11D). Disc of head impunctate. Specimens from Morocco ..... *Platyderus* (*Eremoderus*) *insignitus* Bedel, 1902
– Median lobe of aedeagus with basal bulb longer and ventral sclerite of internal sac short (Figs 9G, H, 11F, G). Disc of head mostly micropunctate. Specimens from Syria and Israel ..... *Platyderus* (*Eremoderus*) *languidus* (Reiche & Saulcy, 1855)

Key to the female specimens of subgenus *Eremoderus* Jeanne from Africa and Southwest Asia

(key does not include *P. davatchii* Morvan, for which diagnostic characters remain unstudied)

1 Pronotal disc with coarse and dense punctuation on basis that at sides reaches anterior half (Fig. 1C–F). Specimens from East Turkey or West- and Southwest Iran 2
– Pronotal disc with less coarse and dense punctuation on basis which usually does not reach anterior half (Fig 1B, 2AC–E, 3A–F, 4A–E). Specimens from West Turkey (Western Toros Mts.), North Iran and other countries 5
2 Parascutellar striola and striae 1–8 less finely punctate impressed (Fig. 1C, D). Specimens from Iran 3
– Parascutellar striola and striae 1–8 moderately to coarsely punctate and impressed (Figs 1E, F, 2A). Specimens from Turkey 4
3 Pronotum narrower compared to head (PW/HW ≤1.45). Elytra more considerably wider than long (EL/EW ≥1.55). Small specimens, 4.30–6.65 mm ..... *Platyderus* (*Eremoderus*) *iranicus* sp. nov.
– Pronotum wide compared to head (vs. PW/HW ≥ 1.45). Elytra less considerably wider than long (EL/EW ≤1.55, vs. EL/EW ≥1.55). Large specimens, 6.00–7.00 mm ..... *Platyderus* (*Eremoderus*) *felixi* sp. nov.
4 Elytral striae and striola less coarsely and deeply punctate (Fig. 1F); all intervals with distinct sculpticells. Color light, rusty red ..... *Platyderus* (*Eremoderus*) *vrabeci* sp. nov.
– Elytral striae and striola coarsely and deeply punctate (Fig. 1E); only intervals 6–9 with more or less distinct sculpticells. Color dark reddish-brown (some specimens with elytra entirely black) ..... *Platyderus* (*Eremoderus*) *vanensis* sp. nov.
5 Specimens from Western Toros Mts., Southwest Turkey ..... *Platyderus* (*Eremoderus*) *weiratheri* Mařan, 1940
– Specimens from other regions and countries 6
6 Base of pronotum and adjacent lateral areas (Fig. 2B–E), mesepisternum, metasternum laterally and metepisternum more coarsely and densely punctate. Specimens from North Iran 7
– Base of pronotum and adjacent lateral areas (Figs 3A–F, 4A–E), mesepisternum, metasternum laterally and metepisternum finely and scarcely punctate to impunctate. Specimens from other countries 10

7 Body (excl. appendages) black. Pronotum sides toward base nearly straight to slightly concave. Dorsal surface of head and base of pronotum with extensive and denser punctation. Length of body: 8.00–8.50 mm ..... *Platyderus* (*Eremoderus*) *lassallei* sp. nov.

– Body (excl. appendages) light to dark brown. Pronotum sides toward base significantly concave. Dorsal surface of head and base of pronotum with less extensive and sparser punctation. Length of body less than 8.00 mm 8

8 Pronotum in relation to head less wide (PW/HW= 1.27; Fig. 2C). Small specimens, <7 mm ..... *Platyderus* (*Eremoderus*) *klapperichi* sp. nov.

– Pronotum in relation to head wider (PW/HW >1.30; Fig. 2D, E). Large specimens, >7 mm 9

9 Pronotum in relation to head wider (PW/HW >1.40), with apex compared with widest point more constricted (PW/PA >1.40). Anterior side of mesofemur ventrally with four setiferous punctures ..... *Platyderus* (*Eremoderus*) *ledouxi* Morvan, 1974

– Pronotum in relation to head less wide (PW/HW= 1.31–1.33), with apex compared with widest point less constricted (PW/PA <1.40). Anterior side of mesofemur ventrally with three setiferous punctures ..... *Platyderus* (*Eremoderus*) *taghizadehi* Morvan, 1974

10 Color reddish brown. Pronotum with sides to base straight or slightly convex; posterior angles not projecting laterally (Fig. 3B, C). Specimens from the Arabian Peninsula 11

– Color orange brown. Pronotum either with sides to base slightly convex to base; posterior angles not projecting laterally (Fig. 4B) or with sides to base straight or slightly concave and posterior angles projecting laterally (Figs 3D, F, 4A–E). Species from North Africa, Israel, Jordan and Iraq 12

11 Pronotum nearly as long as wide (PW/PL= 1.02–1.05), less constricted anteriorly (PW/PA= 1.38–1.42), PA/PB large (Table 3). Apical gonocoxite with two dorsolateral ensiform setae (Fig. 14F) ..... *Platyderus* (*Eremoderus*) *brunki* sp. nov.

– Pronotum slightly wider than long (PW/PL= 1.07–1.11), more constricted anteriorly (PW/PA= 1.44–1.48), PA/PB small (Table 3). Apical gonocoxite with one dorsolateral ensiform seta (Fig. 14D) ..... *Platyderus* (*Eremoderus*) *arabicus* sp. nov.

12 Pronotum less constricted toward base (PW/PB ≤1.11), with sides weakly convex; posterior angles rounded, laterally not prominent (Fig. 4B). Bursa copulatrix long, with apical enlargement (Fig. 15D). Specimens from Iraq ..... *Platyderus* (*Eremoderus*) *irakensis* sp. nov.

– Pronotum more constricted toward base (PW/PB >1.10), with sides straight or slightly concave; posterior angles rounded, laterally prominent or not. Bursa copulatrix short, without apical enlargement (Fig. 15A–C, E, F). Specimens from other countries 13

13 Meso- and metatarsomeres dorsally convex and smooth (Fig. 6D). Tips of pronotal posterior angles protruding laterally (Fig. 6D) ..... *Platyderus* (*Eremoderus*) *jordanensis* sp. nov.

– Metatarsomeres dorsally convex or not (Fig. 6A, B, E) 14

14 Meso- and metatarsomeres dorsally somewhat flattened and slightly grooved (Fig. 6A, B) 15

– Meso- and metatarsomeres dorsally convex and not grooved (Fig. 6E) 16

15 Parascutellar striola and elytral striae 1–7 very shallow, nearly indistinct, with bases more or less reduced, not reaching basal bead. Width of pronotum posterior margin usually large compared to pronotum maximum width and width of anterior margin (PW/PB >1.1, PA/PB >0.88, Table 3) ..... *Platyderus* (*Eremoderus*) *brunneus brunneus* Karsch, 1881

– Parascutellar striola and elytral striae 1–7 distinct, slightly impressed, with bases reaching basal bead. Width of pronotum posterior margin usually small compared to pronotum maximum width and width of anterior margin (PW/PB <1,23, PA/PB <0.89, Table 3) ..... *Platyderus* (*Eremoderus*) *brunneus ferrantei* Reitter, 1909

16 Disc of head impunctate. Specimens from Morocco ..... *Platyderus* (*Eremoderus*) *insignitus* Bedel, 1902

– Disc of head mostly micropunctate. Specimens from Israel and Syria ..... *Platyderus* (*Eremoderus*) *languidus* (Reiche & Saulcy, 1855)

Discussion

While the taxonomic status of *Eremoderus* remained questionable, being insufficiently defined by a taxonomic point (see 'Introduction'), new and interesting material from species supposedly belonging to it was collected and made available for study. The subsequent analysis shows that the group is considerably homogeneous and *Eremoderus* deserves to be treated as a separate subgenus.

At least four character states determine *Eremoderus* as a separate group distinct from *Platyderus* (s. str.): (1) ventral sclerite of median lobe of aedeagus in shape of an elongated drop at lateral view, straight, narrow and elongate at ventral view (Figs 8A–I, 9B–H, 10A–I, 11A–G), (2) seminal canal and receptaculum of comparable lengths (Figs 13A–F, 14A–C, E, F, 15A–F), (3) ventral margin of anterior side of mesofemur with four or more, rarely three setiferous punctures ventrally (Fig. 5A–I), and (4) proximal margin appearing to be "apex" of urite IX symmetrical or nearly symmetrical (Fig. 7A–M). The corresponding states of the four characters in the nominotypical subgenus are, as follows: (1) ventral sclerite of median lobe S-shaped at lateral view, plate-like, wide in ventral view (Figs 8J, 9A, 10J, K), (2) spermathecal canal one-and-a-half to about three times longer than the spermatheca (Fig. 14D), (3) ventral margin of anterior side of mesofemur mostly with two, rarely three such punctures, and (4) proximal margin of urite IX clearly asymmetrical, turned to left (Fig. 7N, O). Forthcoming revisions of selected groups of *Platyderus* s. str. will confirm or reject

whether these traits are well-evaluated, and potentially reveal other important differences between both groups.

Schmidt (2009: 138) discussed the number of the setiferous punctures on the ventral margin of mesofemur from a phylogenetic perspective expressing two different, mutually exclusive one another probabilities. He has supposed that the mesofemoral polysetosy may have derived several times in the genus (i.e., to be a derived state); in the same paper, however, the author speculated that it could be a plesiomorphic state in *Platyderus*. Schmidt also stated (ibid.) that the Middle Asian taxa of the genus with four or more setae "am Innenrand der Mittelschenkel" are neither related to the Atlanto-Mediteranean species groups (i.e., the groups of "*languidus*" and "*insignitus*", sensu Jeanne 1996) nor form a common monophylum with them. However, the present study based on a great number of specimens, has revealed that the higher number of setiferous punctures on the ventral margin of the mesofemur on its anterior side is always linked, in all the examined *Eremoderus* taxa, with the other three shared traits (see above).

As a rule, the species of *Eremoderus* share three or more setiferous punctures on the ventral margin of the mesofemur on the anterior side (cfr. Jeanne 1996; present study). It is the common morphological feature useful to differentiate them from species belonging to *Platyderus* (s. str.). In fact, most species of *Eremoderus* have four or more such punctures, only specimens of *P. taghizadehi* and some specimens of *P. weiratheri* have three such punctures; these last two taxa included in species groups supposed here to be more generalized. On the other hand, the members of the nominotypical subgenus have most frequently two, rarely three setiferous punctures on the ventral margin of the mesofemur on the anterior side.

Without any comments, Hovorka and Sciaky (2003) and Hovorka (2017) listed *P. alticola*, *P. lancerottensis*, and *P. haberhaueri* in *Eremoderus*, adding them to the two species already mentioned by Jeanne (1996) (see part 'Introduction'). Actually, the former two species were long treated as subspecies of *P. languidus* (see Bedel 1902: 214; Israelson 1990: 165–166, figs 1–6). Inclusion of *P. haberhaueri* seems more interesting since no bibliographical data were found to substantiate such an inclusion. Nevertheless, a preliminary study of unpublished material from the Central Asian species *P. haberhaueri*, *P. tadzhikistanus* Kryzhanovskij, 1968 and *P. foveipennis* (Casale, 1988) showed that these taxa also belong to *Eremoderus*. The systematic position of the Chinese *P. sinensis* Casale & Sciaky, 2003 remains questionable in view of the fact that the authors stated that it is "*evidently allied to P. haberhaueri*" (Casale and Sciaky 2003: 82).

Checklist of the species of *Platyderus* (subg. *Eremoderus*)

1. *afghanistanicus*, sp. nov. Afghanistan ("Habatah")
2.1. *alticola alticola* Wollaston, 1864 Canary Islands (Tenerife)
2.2. *alticola descendens* Bedel, 1902 Canary Islands (Gran Canaria)
2.3. *alticola gomerensis* Machado, 1992 Canary Islands (La Gomera)
2.4. *alticola hierroensis* Machado, 1992 Canary Islands (El Hiero)
3. *arabicus*, sp. nov. Saudi Arabia, ? Iraq
4. *brunki*, sp. nov. Yemen
5.1. *brunneus brunneus* Karsch, 1881 Tunisia, Libya
= *elegans* Bedel, 1900, syn. n.
5.2. *brunneus ferrantei* Reitter, 1909: 29, stat. n. Egypt, Israel
6. *chatzakiae*, sp. nov. Greece (Kalimnos)
7. *davatchii* Morvan, 1970 Iran
8. *felixi*, sp. nov. Iran
9. *foveipennis* Casale, 1988 (*Pseudotaphoxenus*) Kyrgyzstan
10. *haberhaueri* Heyden, 1889 Tajikistan, Uzbekistan
11.1. *insignitus insignitus* Bedel, 1902 Morocco
11.2. *insignitus presaharensis* Lagar, 1978 Morocco
12. *irakensis*, sp. nov. Iraq
13. *iranicus*, sp. nov. Iran
14. *jordanensis*, sp. nov. Jordan
15. *klapperichi*, sp. nov. Iran
16. *lancerottensis* Israelson, 1990 Canary Islands (Lanzarote)
17. *languidus* Reiche & Saulcy, 1855 (*Feronia*) Israel, ? Syria
= *parumstriatus* Fairmaire, 1872 (*Sphodrus*)
Note: Except for old published data indicating Syria, no present reliable record is known from this country.
18. *lassallei*, sp. nov. Iran
19. *ledouxi* Morvan, 1974 Iran
20. *tadzhikistanus* Kryzhanovskij, 1968 Tajikistan, ? Uzbekistan
Note: Kryzhanovskij (1968: 163) cited the locality "Джар-Курган" [Dzharkurgan] as situated in SE Uzbekistan. As a populated place with the same name occurs in south Tajikistan (Khatlon Region), the species presence in the adjacent country needs confirmation.
21. *taghizadehi* Morvan, 1974 Iran
22. *vanensis*, sp. nov. Turkey
Note: A separate form southward from the populations of *P. vanensis* may exist in the Karabet Pass, which taxonomic status needs further study.
23. *vrabeci*, sp. nov. Turkey (Nemrut Dağı)
24. *weiratheri* Mařan, 1940 Turkey

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References

Abdel-Dayem MS (2012) An annotated checklist of the endemic Carabidae (Coleoptera) of Egypt. Check List 8(2): 197–203. https://doi.org/10.15560/8.2.197

Anichtchenko A (2005) Nuevas especies de *Platyderus* Stephens, 1828 (Coleoptera, Carabidae) de España. Boletín de SAE 12: 31–45.

Anichtchenko A (2011) Contribution to the knowlege [sic!] of *Platyderus* Stephens, 1827 (Coleoptera, Carabidae) from Spain. Baltic Journal of Coleopterology 11: 33–39.

Anichtchenko A (2012) New species of *Platyderus* Stephens, 1827 (Coleoptera, Carabidae) from North Spain. Baltic Journal of Coleopterology 12: 99–104.

Antoine M (1957) Coléoptères carabiques du Maroc (deuxième partie). Mémoires de la Société des Sciences Naturelles et Physiques du Maroc (N.S., Zoologie) 3: 179–314.

Assmann T, Buse J, Drees C, Friedman ALL, Levanony T, Matern A, Timm A, Wrase DW (2008) The *Carabus* fauna of Israel – updated identification key, faunistics, and habitats (Coleoptera: Carabidae). ZooKeys 1: 9–22. https://doi.org/10.3897/zookeys.1.23

Assmann T, Boutaud E, Buse J, Chikatunov V, Drees C, Friedman ALL, Härdtle W, Homburg K, Levanony T, Marcus T, Renan I, Wrase DW (2015a) The ground beetle tribe Cyclosomini (Coleoptera, Carabidae) in Israel. Spixiana 38(1): 49–69.

Assmann T, Austin K, Boutaud E, Buse J, Chikatunov V, Drees C, Felix RFFL, Friedman ALL, Marcus T, Renan I, Schmidt C, Wrase DW (2015b) The ground beetle supertribe Zuphiitae in the southern Levant (Coleoptera: Carabidae). Spixiana 38(2): 237–262.

Azadbakhsh S, Nozari J (2015) Checklist of the Iranian Ground Beetles (Coleoptera; Carabidae). Zootaxa 4024(1): 1–108. https://doi.org/10.11646/zootaxa.4024.1.1

Bedel L (1900) Description d'un *Platyderus* nouveau (Col.) de la Tunisie méridionale. Bulletin de la Société Entomologique de France 1900: e170. https://doi.org/10.3406/bsef.1900.22589

Bedel L 1902. Catalogue raisonné des Coléoptères du nord de l'Afrique (Maroc, Algérie, Tunisie et Tripolitaine) avec notes sur la faune des îles Canaries et de Madère, premiére partie. Société Entomologique de France, Paris, 209–220.

Bedel L (1906) Communications. Synonymies de Coléoptères paléarctiques. Bulletin de la Société Entomologique de France 1906(8): 91–93. https://doi.org/10.3406/bsef.1906.23895

Casale A (1988) Revisione degli Sphodrina (Coleoptera, Carabidae, Sphodrini). Museo Regionale di Scienze Naturali, Monografie V, Torino, 1024 pp.

Casale A, Assmann T (2017) The Sphodrina of the southern Levant (Coleoptera: Carabidae, Sphodrini). Fragmenta Entomologica 49(1): 13–24. https://doi.org/10.4081/fe.2017.226

Casale A, Sciaky R (2003) A second *Dimorphopatrobus* species from Tibet, and the first Eastern Himalayan *Platyderus* species from Sichuan (China) (Insecta: Coleoptera: Carabidae: Patrobini et Sphodrini). In: Hartmann M, Baumbach H (Eds) Biodiversität und Naturausstattung im Himalaya. Verein der Freunde & Förderer des Naturkundemuseums Erfurt e. V., Erfurt, 79–83.

Csiki E (1931) Carabidae: Harpalinae V (Pars 115). In: Junk W, Schenkling S (Eds) Coleopterorum catalogus. Volumen II. Carabidae II. W. Junk, Berlin, 739–1022.

de Chaudoir M (1866) Monographie du genre *Platyderus*. Annales de la Société Entomologique de France 6(4): 105–115.

Fairmaire L (1872) Diagnoses et synonymies de divers coléoptères. Annales de la Société Entomologique de France 2(5): 47–48.

Guéorguiev B (2009) Three new species of *Platyderus* from South Italy (Coleoptera: Carabidae: Sphodrini). Zootaxa 2268: 41–51. https://doi.org/10.11646/zootaxa.2268.1.3

Hanley RS, Ashe JS (2003) Techniques for dissecting adult aleocharine beetles (Coleoptera: Staphylinidae). Bulletin of Entomological Research 93: 11–18. https://doi.org/10.1079/BER2002210

Hovorka O (2017) Atranopsina Baehr, 1982. In: Löbl I, Löbl D (Eds) Catalogue of Palaearctic Coleoptera. Volume 1 Revised and Updated Edition. Archostemata – Myxophaga – Adephaga. Brill, Leiden – Boston, 755–760.

Hovorka O, Sciaky R (2003) Atranopsina Baehr, 1982. In: Löbl L, Smetana A (Eds) Catalogue of Palaearctic Coleoptera. Volume 1. Archostemata – Myxophaga – Adephaga. Apollo Books, Stenstrup, 521–524.

ICZN [International Commission on Zoological Nomenclature] (1999) International Code on Zoological Nomenclature. 4th Edn. Adopted by the International Union of Biological Sciences. International Trust for Zoological Nomenclature, London. https://www.iczn.org/the-code/the-code-online/

Israelson G (1990) A *Platyderus* Stephens (Col., Carabidae) from Lanzarote, Canary Islands. Vieraea 19: 165–167.

Jeanne C (1996) Le genre *Platyderus* Stephens: I. – Espèces nouvelles de la péninsule Ibérique (Coleoptera, Pterostichidae). Bulletin de la Société Entomologique de France 101(4): 397–412. https://doi.org/10.3406/bsef.1996.17271

Jedlička A (1963) Neue Carabiden aus Anatolien und vom Balkan. Koleopterologische Rundschau 40–41(1962–1963): 16–22.

JCR (2004) *Platyderus* (*Eremoderus*) *languidus* Reiche & Saulcy, 1855. http://jcringenbach.free.fr/website/beetles/carabidae/Platyderus_languidus.htm

Karsch F (1881) Die Käfer der Rohlfs'schen Afrikanischen Expedition 1878–79. Berliner Entomologische Zeitschrift 25: 41–50. [+ i pl] https://doi.org/10.1002/mmnd.18810250108

Kryzhanovskij OL (1968) Novye i maloizvestnye zhuzhelitsy (Coleoptera, Carabidae) fauny SSSR i granichashchikh s nim stran. Entomologicheskoe Obozrenie 47: 160–175.

Lagar Mascaró A (1978) Un nuevo *Platyderus* del Marroc. Coleoptera Pterostichidae. Excursionisme. Bulletí de la Unió Excursionista de Catalunya 41: 19–20.

Lindroth CH (1956) A revision of the genus *Synuchus* Gyllenhal (Coleoptera: Carabidae) in the widest sense, with notes on *Pristosia* Motschulsky (Eucalathus Bates) and *Calathus* Bonelli. Transactions of the Royal Entomological Society of London 108: 485–576. https://doi.org/10.1111/j.1365-2311.1956.tb01274.x

Lohaj R, Mlejnek R (2007) Two new species of *Laemostenus* (*Antisphodrus*) (Coleoptera: Carabiade) from Turkey and Syria. Acta Societatis Zoologicae Bohemicae 71: 7–14.

Lorenz W (1998) Nomina Carabidarum – a directory of the scientific names of ground beetles (Insecta, Coleoptera "Geadephaga": Trachypachidae and Carabidae incl. Paussinae, Cicindelinae, Rhysodidae). First edition. Wolfgang Lorenz, Tutzing, [ii +] 502 pp.

Lorenz W (2005) Systematic list of extant ground beetles of the world (Insecta Coleoptera "Geadephaga": Trachypachidae and Carabidae incl. Paussinae, Cicindelinae, Rhysodinae). Second Edition. Wolfgang Lorenz, Tutzing, [ii +] 530 pp.

Machado A (1992) Monografía de los carábidos de las Islas Canarias (Insecta, Coleoptera). Instituto de Estudios Canarios, La Laguna, 734 pp.

Machard P (2017) Un *Platyderus* nouveau du Maroc (Coleoptera, Carabidae). Coleopterist 20(2): 101–102.

Machard P (2019) Catalogue des Coléoptères Carabiques du Maroc (Coleoptera, Carabidae). Coleopterist 21(3): 183–203.

Machard P (2020) Dans le genre *Platyderus* Stephens, 1827: Description de deux espèces nouvelles (Coleoptera, Carabidae). Coleopterist 23(2): 107–112.

Mařan J (1940) Nový druh rodu *Platyderus* Schaum z Malé Asie. Speciei novae generis *Platyderus* Schaum ex Asia minore descriptio (Coleopt. Carabidae). Časopis Československé Společnosti Entomologické 37: 25–26.

Morvan P (1970) Contribution â la connaissance des coléoptères caraibiques de l'Iran. Bulletin de la Société Entomologique de France 74 (1969): 192–198. https://doi.org/10.3406/bsef.1969.21081

Morvan P (1974) Nouveaux coléoptères carabiques d`Iran (6eme note). Journal of Entomological Society of Iran 1: 143–156.

Ortuño VM, Gilgado JD (2010) Update of the knowledge of the Ibero-Balearic hypogean Carabidae (Coleoptera): Faunistics, biology and distribution. Entomologische Blätter 106: 233–264.

Piochard de la Brûlerie CJ (1876) Catalogue raisonné des coléoptères de la Syrie et de l'île de Chypre. 1re partie (suite). Annales de la Société Entomologique de France [5] 5(1875): 395–448.

Reiche L, Saulcy F (1855) Espèces nouvelles ou peu connues de coléoptères, recueillies par M. F. de Saulcy, membre de l`Institut, dans son voyage en Orient, et décrites par M.M. L. Reiche et Félicien de Saulcy. Annales de la Société Entomologique de France 3: 561–645. [troisième série]

Reitter E (1909) Espĕces nouvelles de coléoptĕres égyptiens. Bulletin de la Société Entomologique d'Egypte l: 29–32.

Renan I, Assmann T, Friedberg A (2018) Taxonomic Revision of the *Graphipterus serrator* (Forskål) group (Coleoptera, Carabidae): An increase from five to 15 valid species. ZooKeys 753: 23–82. https://doi.org/10.3897/zookeys.753.22366

Ruiz-Tapiador I, Anichtchenko A (2007) New species of *Platyderus* Stephens, 1827 (Coleoptera, Carabidae) from Iberian peninsula. Baltic Journal of Coleopterology 7: 185–190.

Sahlberg JR (1903) Coleoptera Levantina mensibus Februario et Martio 1896 in Palaestina et Aegypto inferiore collecta. Öfversigt af Finska Vetenskaps-Societetens Förhandlingar 45[1902–1903](18): 1–36.

Schmidt J (2009) *Platyderus anandi* n. sp., ein Tertiärrelikt im zentralen Nepal-Himalaya (Insecta: Coleoptera: Carabidae: Sphodrini). In: Hartmann M, Weipert J (Eds) Biodiversität und Naturausstattung im Himalaya III. Verein der Freunde & Förderer des Naturkundemuseums Erfurt e. V., Erfurt, 137–140.

Serrano J (2003) Catalogue of the Carabidae (Coleoptera) of the Iberian Peninsula. Monografias Sociedad Entomologica Aragonesa 9, Zaragosa, 130 pp.

Serrano J (2013) New Catalogue of the Family Carabidae of the Iberian Peninsula (Coleoptera). Universidad de Murcia, Murzia, 192 pp.

Shorthouse DP (2010) SimpleMappr, an online tool to produce publication-quality point maps. http://www.simplemappr.net [Accessed May 10, 2022]

Wrase DW, Kataev BM (2016) Four new species of genus *Acinopus* Dejean, 1821, subgenus *Acinopus* from southern Iran, from Sinai, and from western Saudi Arabia, and faunistic and taxonomic notes on species previously described (Coleoptera, Carabidae, Harpalini, Harpalina). Linzer Biologische Beiträge 48(2): 1783–1806.